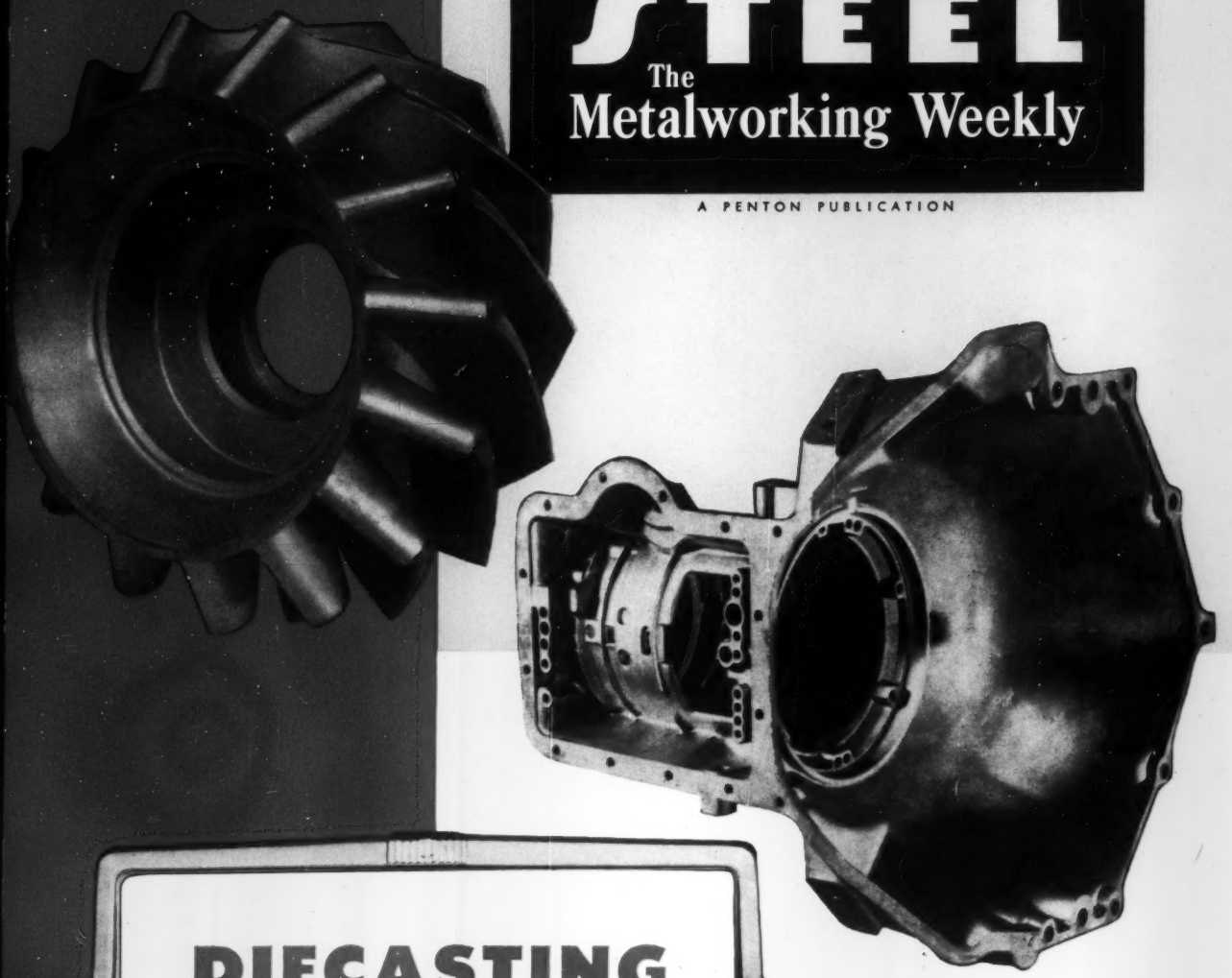
AUGUST 5, 1957

# STEEL
## The Metalworking Weekly

A PENTON PUBLICATION



## DIECASTING

**Bigger and better aluminum diecastings are boosting sales, expanding uses. Vacuum methods open up new areas . . . page 89**

**production ideas**

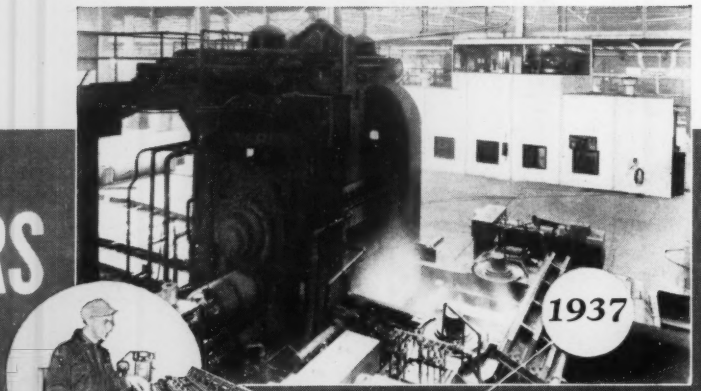
NO. 13 OF A SERIES


- **Our Next Shortage: Marketing Personnel . . . page 66**
- **Metal Buyers See Few Inventory Changes . . . page 137**


**CONTENTS — PAGE 5**

# 20 YEARS OF EC&M DESIGN LEADERSHIP!

## IN AUTOMATIC-POSITIONING SCREWDOWN CONTROL



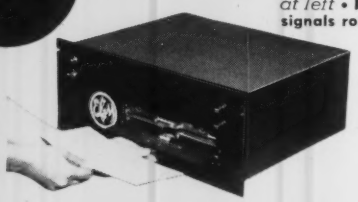

**20 YEARS AGO,** EC&M Automatic-Positioning Screwdown Control was installed in this mill. It has been doing an outstanding job ever since.

Since then, this same basic EC&M system has been installed in nearly 50 other mills—including blooming mills, billet mills, beam mills, plate mills and reversing roughers ahead of hot strip mills.

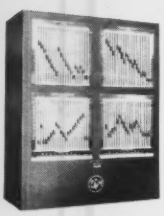
Now, this same proven system has been expanded to provide programming either by punched cards or by slider panels—for new or existing installations, operated from either constant or adjustable voltage.

**1957**

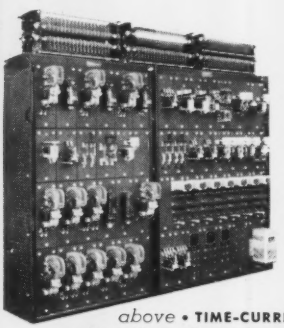
### PROGRAMMING NOW AVAILABLE BY PUNCHED CARDS OR SLIDER PANELS



*at left* • Punched Card Reader automatically signals roll setting for each pass



*at right* • Slider Panel provides roll settings for 2 complete schedules. Pistol grip switch provides immediate transfer from one to the other



*above* • TIME-CURRENT Screwdown Controller with Magnetic Amplifier Control and Relay Panel

### EC&M DESIGN ADVANTAGES

A single pushbutton controls the most important operation in rolling. Screwdown rolls accurately set for each pass. No schedule to remember.

Ability to change from automatic to manual and back again, instantly available to the roller.

EC&M system is direct reading. No coding and de-coding requiring multiplicity of relays.

Easily serviced by regular maintenance crew. Simple adjustment for roll changes.

Over 900 roll positions obtainable from only 2 small (main and vernier) face-plate, positioning switches.

New operators quickly trained.

***They all add up to GREATER TONNAGE— ACCURACY— QUALITY***

***for the complete story, write for Booklet 9250-PS***

**THE ELECTRIC CONTROLLER & MFG. CO.**

*A DIVISION OF THE SQUARE D COMPANY*

**CLEVELAND 28 • OHIO**

7930

Truckload of bricks bundled in lots of 100 with strapping made by Signode Steel Strapping Co., Chicago, Ill.

# Look what's happened to the hod-carrier!

A few cents' worth of steel strapping enables this fellow to wheel 100 bricks at a time around the job-site, where his predecessor carried only ten!

Yes, they work a lot of magic these days with that familiar packaging standby, steel strapping. Cargo handlers secure lading with it, warehousers bind pallet-ends with it, builders tie up forms for concrete columns with it. There appears no limit to the promotional imagination of steel strapping manufacturers.

The raw material for most steel strapping is hot-rolled coiled sheets. Steel-strapping manufacturers look to Bethlehem for a healthy mileage of this raw material. Strapping is one of the many uses of sheet steel which have grown into important consumers of Bethlehem sheets during recent years. Combine the many relatively new and fast-growing sheet uses with the longer-established ones, and you can understand why Bethlehem is being called on to turn out steel sheets in larger volume than ever before. We would be glad to discuss your sheet steel requirements with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

## BETHLEHEM SHEETS

BETHLEHEM STEEL

# don't lose your head!

When bearings fail, don't go to pieces... get on the phone and tell an authorized SKF distributor your troubles. He will help you put things back in order, quickly. Every authorized SKF distributor carries a complete line of SKF ball and roller bearings and pillow blocks — a type for every use — and he is factory-trained by SKF to assist you on any knotty production problems.

Call him for prompt, reliable service on all bearing requirements.

7788

SERIES SES RUBBER-FLEX

SERIES SY

SERIES FY FLANGED MOUNTING

SERIES SUS

SERIES FUS FLANGED MOUNTING

SERIES SAF

SELF-ALIGNING BALL BEARING

SINGLE ROW DEEP GROOVE

ANGULAR CONTACT BALL BEARING

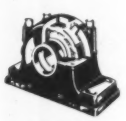
DOUBLE ROW DEEP GROOVE

SPHERICAL ROLLER BEARING

CYLINDRICAL ROLLER BEARING

SPHERICAL ROLLER THRUST BEARING

TAPERED ROLLER BEARING ("Tyson")



SERIES SDAF

# SKF®

## BEARING REPLACEMENT SERVICE

**SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.**

*Reg. U.S. Pat. Off. Tyson Bearing Corporation

# *How do you keep rocketing at 8000 mph?*

Courtesy: Resistoflex Corp., Roseland, N. J.

For one thing, you feed your rocket fuel – savagely corrosive stuff, like white and red fuming nitric acid. You use a fuel line of Teflon hose, wrapped in stainless wire braid – with special stainless steel fittings to make it stay put.

The fittings are swaged on – and listen to a few of the 19 test beatings they get. In an impulse test, with fluid temperature at 400° F., an impact of 4500 psi is applied, and reduced to zero in one second. The cycle is repeated 35 times a minute – for 100,000 cycles.

Another test, at 450° F., submits the hose and fittings to vibration at 2000 cycles per minute through ¾" lateral movement. This grueling test is applied for 200 hours . . . is followed by a severe high-pressure test to assure a leak-proof seal. It's hard on the fittings . . . but a positive test of durability.

Frasse has provided trouble-free stainless steel for this vital fitting application since its inception – and often supplied it *in hours*, to meet production deadlines. So, if you want reliability in your product, and a reliable source of supply . . . rely on Frasse for *all* your stainless requirements. It's a habit you'll find profitable.

## *Call FRASSE for* COMPLETE STAINLESS STEEL SERVICE

**Bars • Forgings • Sheets • Strip • Plates • Wire • Tubing • Pipe • Fittings • Valves**

**Peter A. Frasse & Co., Inc.**

**NEW YORK 13, N. Y.**
17 Grand St.
WAlker 5-2200

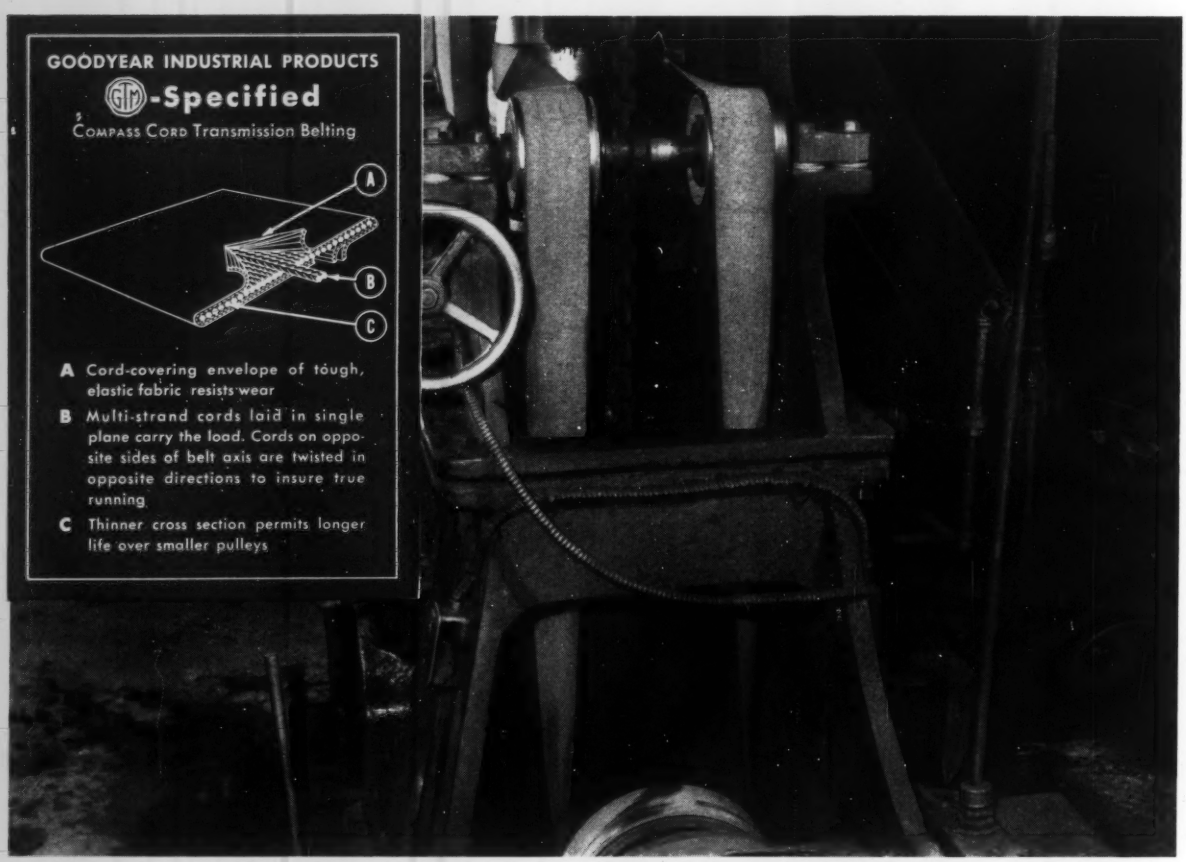
**PHILADELPHIA 29, PA.**
3911 Wissahickon Ave.
BAldwin 9-9900

**BUFFALO 7, N. Y.**
P.O. Box K, Sta. B
BEdford 4700

**SYRACUSE 1, N. Y.**
P.O. Box 1267
HOward 3-8655

**HARTFORD 1, CONN.**
P.O. Box 1949
JAckson 9-6861

**LYNDHURST • BALTIMORE • ROCHESTER**


GOODYEAR INDUSTRIAL PRODUCTS
G-T-M-Specified
COMPASS CORD Transmission Belting
A
B
C
A Cord-covering envelope of tough, elastic fabric resists wear
B Multi-strand cords laid in single plane carry the load. Cords on opposite sides of belt axis are twisted in opposite directions to insure true running
C Thinner cross section permits longer life over smaller pulleys

# Weathers rough grind for 3 years—not 3 months

Belting the rough ball-bearing grinders used by this New England firm is no cinch. They have a tough combination of horizontal and vertical drives. And each belt must make two quarter turns. So it's easy to see why previous belts stretched and slipped—had to be replaced in as little as 1 month, never went much more than 3.

But the G.T.M.—Goodyear Technical Man—had a suggestion: his COMPASS CORD Transmission Belt. It's sinewed with endless load-carrying cord—has a thin cross section for longer life over small pulleys. Result: the G.T.M.'s highly stretch-resistant belt *ended take-up problems—minimized maintenance—boosted belt life a phenomenal 3 years or better.*

And that's typical of the G.T.M.'s success in belting the high costs out of vital production operations. To cash in on his unique moneysaving abilities—wherever industrial rubber products are used—contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

**COMPASS CORD BELT by**

**GOODYEAR**

**THE GREATEST NAME IN RUBBER**

Compass—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

**IT'S SMART TO DO BUSINESS** *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

# IN THIS ISSUE

STEEL
The Metalworking Weekly

**August 5, 1957**
Vol. 141 No. 6

**METALWORKING OUTLOOK**

49 **IT&T's four main defense divisions see continued high sales** in '58 as result of Air Force's shift from manned aircraft to guided missiles

☑ 55 **First-half earnings generally good**—Most firms are optimistic about second half. Profit squeeze continues

57 **Big unions are big business**—Should they be regulated?

58 **Leffel does well** with same product line it had more than 90 years ago

59 **U.S. leads in atom power race**—Soviet claims called exaggerated

60 **What causes inflation?**—Congressmen gingerly avoid the question

65 **SIC shift**—Government revises Standard Industrial Classification codes

☑ 66 **Needed: More marketing personnel** as the economic emphasis switches from production to sales

83 **U.S. Steel starts modernizing rolling facilities** at Duquesne Works

**TECHNICAL OUTLOOK**

87 **Look for more applications of plastic coated steel,** especially in automotive and architectural fields

88 **Water paints for metal parts are durable,** eliminate fire hazards

**COVER ARTICLE**

89 **Companies are using more diecastings**—Growth in aluminum is amazing. No. 13 in STEEL's Production Ideas series

☑ 93 **Subzero coolant speeds cuts** in tough metals like AISI 4130

96 **Progress in steelmaking**—Maintenance of equilibrium in blast furnace operation—Part II

104 **Extrusion press is versatile**—It can produce a variety of shapes

107 **Trucks keep steel moving** between mills at J&L's Cleveland Works

☑ 110 **Flexible plant layout** eases Westinghouse expansion job

**MARKET OUTLOOK**

135 **Steel buying is on upturn**—Indexes and composites, 145; steel prices, 147; ores, 153; ferroalloys, 154; scrap trends, 157, prices, 158

☑ 137 **Deliveries are good, say metals buyers**—Structurals and heavy plates still tight, respondents to STEEL's quarterly survey report

160 **Nonferrous metals**—Aluminum prices go up—Prices, 162

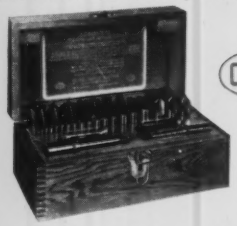
**REGULAR FEATURES**

6 Behind the Scenes
10 Letters to the Editors
16 Staff
23 Calendar of Meetings
53 The Editor's Views
62 Windows of Washington
69 Mirrors of Motordom
73 The Business Trend
77 Men of Industry
117 New Products
132 New Literature
165 Advertising Index

Published every Monday by The Penton Publishing Co., Penton Bldg., Cleveland 13, O. Subscriptions in the U.S. and possessions and Canada, $10 a year; all other countries, $20. Current issues, 50 cents each. Metalworking Yearbook issue, $2. Accepted as controlled circulation publication at Cleveland. Copyright, 1957, The Penton Publishing Co.

**Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.**

**Continental Counterbores never bind. They disengage quickly, easily. Anti-wedging action saves time, tools and nerves. See your Ex-Cell-O representative or write Continental Tool Works, Detroit.**




**Choice of three sets to fulfill the needs of large and small toolrooms. Write for catalog and prices.**

57-33

Continental

**TOOL WORKS**

Division of

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

# behind the scenes

## Marketing Men Marked

On page 66, STEEL examines a situation that rates more than a flash of attention: The shortage of marketing personnel. Seems as how this situation came about because production has caught up with demand. Industry, as of 10:20 a.m., Aug. 5, 1957, finally appears to have almost enough engineers, but now it is worried about the occurrence of qualified marketing personnel.

Because a successful economy rests on so many varied efforts, it would be fatuous to declare that merchandising alone is the key to profits. However, if you discount the effects of sound marketing, you might just as well prepare to close up shop. You can't make money without devoting a whole lot of attention toward sales.

We know of one man who didn't give a hoot about profits. His name was Crates, and he used to live in Thebes almost four centuries before some money-changers were driven from a temple in Jerusalem. He feared that the quiet of philosophical pursuits would be disturbed by the cares of wealth, so he threw all his money into the sea. This old boy was loaded, too, the story goes, and when he jettisoned all that moola, it made a respectable splash. It's comforting to know that he became quite a philosopher, but that kind of philosopher modern industry can do without; unless, of course, the cabbage he drops happens to be occupation zlotys.

## Light on Diecasting

The castings you saw on the cover a moment ago were diecast. They are aluminum alloy, and represent a trend that has been going on since—let's see—well, since the Middle Ages, when talented craftsmen made iron molds, or dies, into which they poured pewter. Diecasting was found to be superior to sand or plaster casting in that the molds didn't have to be destroyed to recover the product; but just when the inventors began shaking hands with themselves, somebody (possibly a smart apprentice) reminded them that the higher the melting point of the metal, the more difficulties they would encounter.

When Otto Mergenthaler invented the Linotype machine, a contrivance which produces cast slugs of type, he was obliged to use a tin-lead alloy; and that is why, even to this day, when the most golden phrases are set in print they are reduced to lead.

Diecasting has risen in importance since the war. In 1800, toy manufacturers poured lead into two-part iron molds, and rejoiced that the 619°F melting point didn't harm the molds. Today, diecasting machines produce as many as 500 castings per hour, and their owners rejoice that the dies are strong enough to withstand 1600°F. That would be the melting point of brasses. or copper-zinc alloys.

What is the future of diecasting? What are its limitations? How can you exploit its many advantages? Frankly, friends, we haven't the vaguest idea. But if you *want* to know, turn at once to page 89.

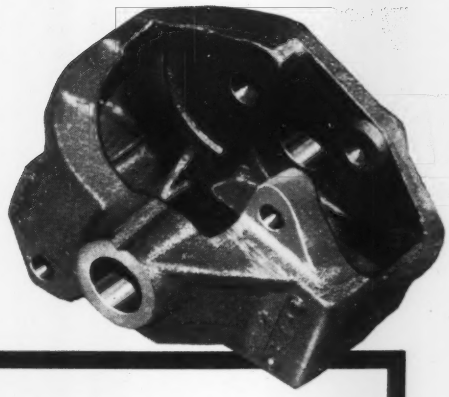
## J DWNNQ VWNU

The small but faithful band of puzzle-worker-outers who gravitate to this corner of page 6, regardless of the weather, are entitled to a rest from some of the rougher forms of mathematics that sometimes appear here. Most of it is a mystery to us, anyway. Here, for a change, is a cryptoquip, together with a cryptocipher. We selected a sentence at random from a recent issue of STEEL (so we couldn't be accused of inventing something out of the ordinary) and kicked the letters and ciphers all around. As the item stands now, if a K is an A, it is an A throughout; if a 3 is a 6, it is always a 6. Ready? Here we go:

VA 6400 KYJSG OGYX., XVWWDEHYTF, EHVQW 667 EJYTND JAK 1 WGMEGJWD; VA 6401, 651 JAK 68. 6402'D EJOZQGT GR GYKNYD VAOQHKND YNLHNDWD RGY 69 KGOZD.

Shrdlu

(Metalworking Outlook—Page 49)

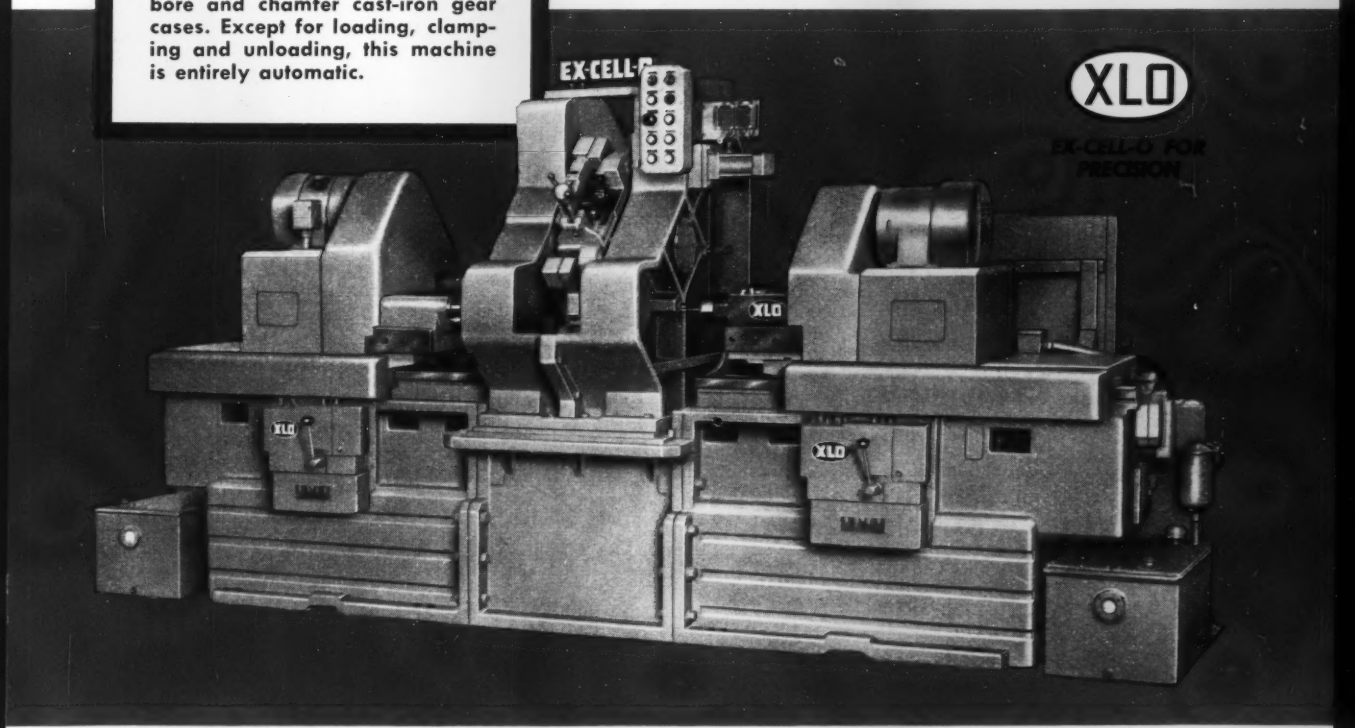


# Lowers Cost of Gear Cases– Speeds Production!

## Ex-Cell-O 2-Way Machine

**ABOVE: Gear case after machining. Hole sizes are held within .0005", centers .001".**

**BELOW: This Ex-Cell-O Precision Two-Way Machine equipped to bore and chamfer cast-iron gear cases. Except for loading, clamping and unloading, this machine is entirely automatic.**




Typical of Ex-Cell-O's constant improvement in the field of precision production is this Two-Way Precision Boring Machine.

Operations on the cast-iron gear case illustrated include finish boring seven holes and chamfering diameters at two points. With its new hydraulic control panel each way unit has a greater range of feeds and a higher rate of rapid traverse.

Like all standard Ex-Cell-O Machines, this Two-Way Model is easily adapted at slight cost to a variety of precision setups. For further information, contact the Ex-Cell-O representative in your area, or write, wire or phone direct to Ex-Cell-O, Detroit.

**EX-CELL-O CORPORATION**
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

57-2

# STAINLESS STEEL MAKES THE DIFFERENCE

## ...its effect on modern flight

Faced with the challenging problems of super speeds, super heat and super engines, aircraft designers are turning to stainless steel. Why? Because stainless steel combines the necessary heat and corrosion resistance with superior strength, durability and toughness.

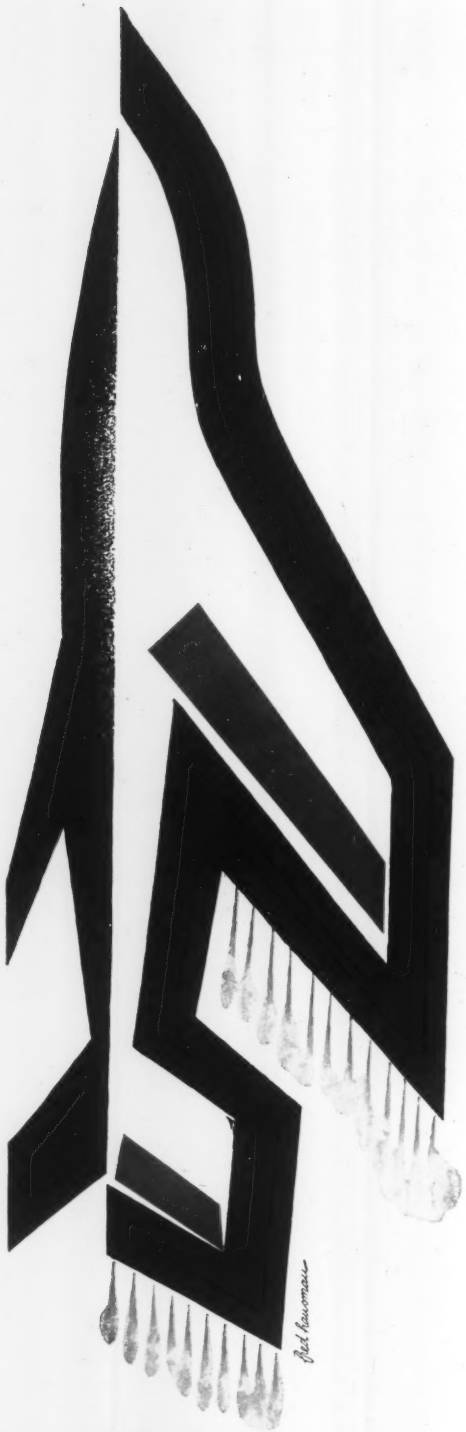
These same qualities make stainless steel the answer to many design and manufacturing problems in other transportation equipment as well as in growing thousands of industrial, architectural and consumer products.

For more information about stainless steel and the contribution it can make to your product or marketing problems, see your stainless steel supplier or write ELECTROMET—leading producer of more than 100 alloys for the metal industries, including chromium and manganese used for making stainless steels. ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 E. 42nd Street, New York 17, N. Y.

***METALS DO MORE ALL THE TIME ...THANKS TO ALLOYS***

**Electromet**
**FERRO-ALLOYS AND METALS**

**UNION CARBIDE**



**Thin sheets of heat-resistant stainless steel on the wings and tail of an experimental rocket plane helped it to safely set the newest world's speed record—1,900 m.p.h.**

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

# Cleveland miniature socket screws give extra strength in compact assemblies

Cleveland miniature cap and set screws eliminate the need for designing special screws to fasten parts in compact units. In countless intricate devices – servomechanisms, computers, typewriters, electronic and electrical equipment–they are used as functional parts permitting significant reduction in size, weight and cost without sacrificing strength.

Dimensions are held to very close tolerances. Accurately formed hexagon sockets insure high torque, nonslip wrenching, and maximum wrench holding power. Threads are rolled for accurate Class 3 fit and to gain extra fatigue and tensile strength. Alloy steel screws are carefully heat treated to obtain optimum of 180,000 psi minimum tensile strength.

Cleveland standard miniature screws are available from stock in both high quality heat treated alloy steel and nonmagnetic 18-8 stainless. Write today for prices and a copy of the Cleveland socket screw products folder.

**RECOMMENDED INSTALLATION TORQUES IN IN.-LB. FOR HEAT TREATED ALLOY STEEL SOCKET SCREWS**

| Socket head cap screws | | | Socket set screws, plain cup point | | |
|---|---|---|---|---|---|
| Diameter | NC | NF | Diameter | NC | NF |
| #0 | — | 2.0 | #0 | 0.5 | 0.5 |
| #1 | 3.5 | 3.5 | #1 | 1.5 | 1.5 |
| #2 | 6.0 | 6.0 | #2 | 1.5 | 1.5 |
| #3 | 8.5 | 9.5 | #3 | 5.0 | 5.0 |

**THE CLEVELAND CAP SCREW COMPANY**

4444-2 Lee Road, Cleveland 28, Ohio

WAREHOUSES: Chicago • Philadelphia • New York • Los Angeles

DURASPUN

20-FOOT FURNACE ROLLS
**Centrifugally Cast**

. . . of Duraloy HH Alloy, one of the most widely used high chrome, medium nickel alloys.




Two items concerning these furnace rolls may be of particular interest:

a—the size: 20 feet long—14" OD, ¾" wall thickness

b—*welding operations* by which reducing cones and shafts (both statically cast of the same alloy) were welded to the centrifugally cast rolls

These two items will serve to emphasize two phases of our service: (1) the large size centrifugally cast tubes we are able to produce and (2) our machining and finishing facilities, including welding.

Our new 16-page general Bulletin — 3354-G — gives complete details. Would you like a copy? When writing or calling would you mind telling us the general nature of your high alloy casting requirements? Better yet, if you have specific requirements on which we could help, let us have the details.

The DURALOY Company
OFFICE AND PLANT: Scottdale, Pa.
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.


# LETTERS
## TO THE EDITORS

### Company To Study Plan

We believe the article, "How To Aid Your Engineers" (July 15, page 64), contains excellent material and a plan worth investigating for application in our rapidly expanding engineering department.

Please send two copies for our engineering staff to study.

W. E. Patterson
Engineering Department
Pfaudler Co.
Elyria, O.

### Direct Aid to Work

The excellent two-part article, "How To Avoid Trouble with Stainless Welds" (June 24, page 116, and July 1, page 70), provided information of direct interest in our work.

We would appreciate three copies to fulfill the requirements of our welding departments at our Dayton, O., and Buffalo, N. Y., plants.

Walter A. Luce
Duriron Co. Inc.
Dayton, O.

### New Frontier To Explore



Please send six copies of your excellent Program for Management article, "Research . . . Threshold to the Future" (July 15, page 93). I found it most interesting—full of meat—and would like to pass these copies on to others who will be interested.

C. M. Marberg
Director of Research
Inland Steel Container Co.
Chicago

### Old, But Still Marvelous

A problem came up the other day involving an SAE spec, an equivalent ASTM spec and a federal spec. We were almost at a loss on how to solve it because we didn't have time for the usual type of investigation required.

I went to the superintendent of the shop, a man of 40 years or more experience, and told him of the problem. He smiled, reached into his desk and pulled out the most amazing, the most incredibly fantastic and profoundly magnificent publication that I have ever seen in my ten years of experience.

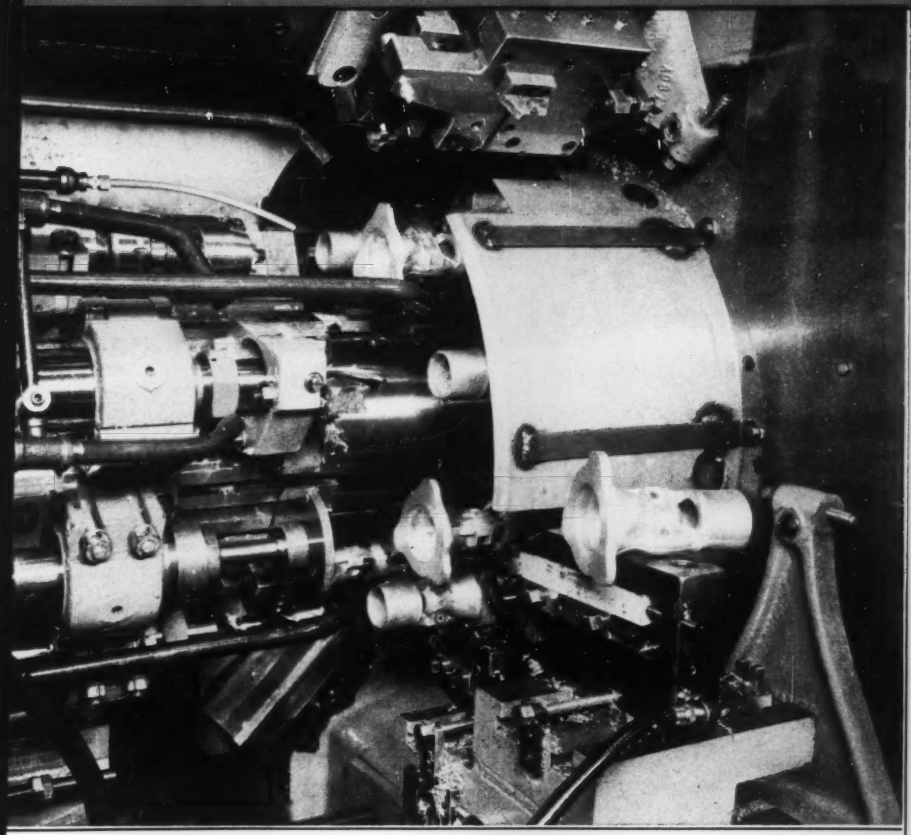
It was a copy of STEEL's *Specification Handbook* (January, 1953). With it, it took us no longer than a minute to solve the problem. I knew at once that such a publication would be of infinite value to me and our key engineers.

I realize, of course, that since this incredible handbook was published out

*(Please turn to page 12)*

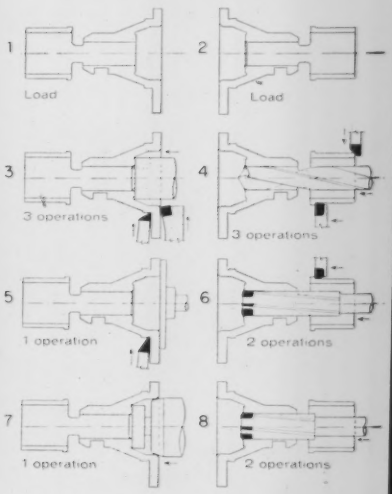
# Acme-Gridley

## RPA-8 SPINDLE CHUCKER

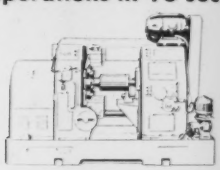


**BASKET HUB**
**ALUMINUM DIE CASTING**

**Double indexing—both ends completed at one setup on 6" RPA-8 Acme-Gridley Chucking Automatic.**




**12 operations in 13 seconds**



## SPEEDS PRODUCTION . . .

### eliminates special machine investment

When it became necessary to replace the special machine on which this washing machine basket hub had been produced, the production engineer chose an Acme-Gridley eight spindle chucker. His choice was based on two factors: lower initial investment than that required by the special machine; greater adaptability of the Acme-Gridley with proper tooling to handle many such jobs that otherwise would require special equipment.

Acme-Gridley 8-spindle automatic chucking machines give you maximum production at lowest cost per piece because of greater tooling flexibility, double indexing that permits finishing both ends of the piece at one time, and comprehensive tooling engineering that comes only from COMPLETE LINE experience.

**Write today for**
**Bulletin Nos. CM-44 and CM-51A**

**INDEX** . . . to lower machining costs . . . with *Acme-Gridley* **CONTROLLED CYCLE**

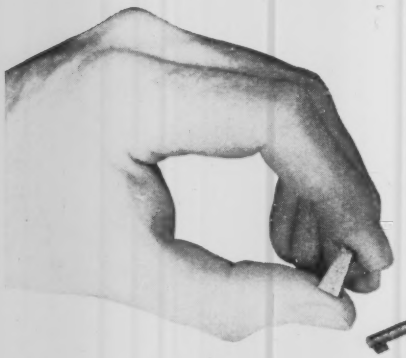
# National Acme


THE NATIONAL ACME CO.
189 EAST 131ST STREET
CLEVELAND 8, OHIO

Sales Offices . . . Newark, N. J. . . . Detroit, Mich. . . . Chicago, Ill.

Wanted: an economical material that can be used for products regularly made in sizes of *less than an ounce* and *up to 150 lbs.* The material must have toughness and ductility, high yield strength and impact resistance, and excellent machinability.

**How about Malleable?**



Typical examples of malleable castings that barely tip the scales.

A Pearlitic Malleable gear cover for use in 15 ton mine locomotive. Weight 111 lbs.

Many design problems—including even heavier parts—can be solved with malleable iron when you understand its widely versatile possibilities. Call a malleable foundry for information and suggestions, or write to the Malleable Founders' Society.

Malleable FOUNDERS' SOCIETY

1800 Union Commerce Building Cleveland 14, Ohio

# LETTERS

*(Concluded from page 10)*

of problems arising in World War II, it may be difficult for you to comply with my request for a copy. However, if you are able somehow to supply about ten of these handbooks for my key men and me, not only will you be helping me immeasurably, but also the Navy department as well.

Irwin B. Spandau
Chief Design Co-ordinator
Marine & Mechanical Engineering Department
Design Division
New York Naval Shipyard
Brooklyn, N.Y.

• *Our supply of* STEEL's Specification Handbook *is exhausted, but we have contrived to come up with one copy which we are sending for your personal use. For the others, we suggest you obtain copies of the Supply and Logistics Handbook—Standardization H 1-A,* Cross Index of Chemically Equivalent Specifications and Identification Code *at the nearest branch of the U.S. Department of Commerce, or write to the office of the Assistant Secretary of Defense, Supply & Logistics, Washington 25, D.C. This is essentially the same as our handbook, but more current.*

## Inflation Cuts Dollar Value

Please send a copy of the informative article, "Is Wage Inflation at Fault?" (June 17, page 64).

Of course, the extent of enlightenment on the part of the individual reader will depend upon the degree to which he will infer certain important economic relationships.

E. L. Recchion
Standards Engineering Section
Betts Atomic Power Division
Westinghouse Electric Corp.
Pittsburgh, Pa.

## Old Method Up to New Tricks

In your July 8 issue, you had an interesting article, "Rolls Forge Precision Parts" (page 97). I would appreciate two copies.

R. H. Mangle
Section Supervisor
Factory Engineering
Tapco Division
Thompson Products Inc.
Danville, Pa.

Read this article with interest and would like eight copies.

H. R. Potter
District Manager
Carpenter Steel Co.
Cleveland

## Tool to Sales Force

Your article, "Managing Our Markets" (June 17, page 93), impressed us as an advantageous communication tool to our local sales force. Please forward 75 copies.

Robert Oberhausen
Crucible Steel Co. of America
Chicago

## Article Aids Chemical Engineer

Kindly send a copy of the article, "Atmosphere Control" (Part I, May 20, page 138, and Part II, May 27, page 96). I am a chemical engineer and have been working for the U.S. Army in Japan for 11 years. This story will help me a great deal.

J. Mizuno
Shinzyuku-ku
Tokyo, Japan

## "A new press just wasn't in the cards...

**so we rebuilt this one and saved ourselves a lot of money!"** And it can be done with any Bliss press. Bliss has developed 42 modernization "packages"—pre-engineered assemblies—all you need to make an old press act young again. Add faster clutches, modern adjustments, more compact gearing, greater capacity. Do it in *your* own plant to keep downtime at a minimum. Or have Bliss do a complete rebuilding job for you.

Which is better? It's up to you. We'll give you the facts, but it's up to you. For here at Bliss, we consider the sale but the beginning of our responsibility. Which is what we mean when we say, "Bliss is more than a name... it's a guarantee."

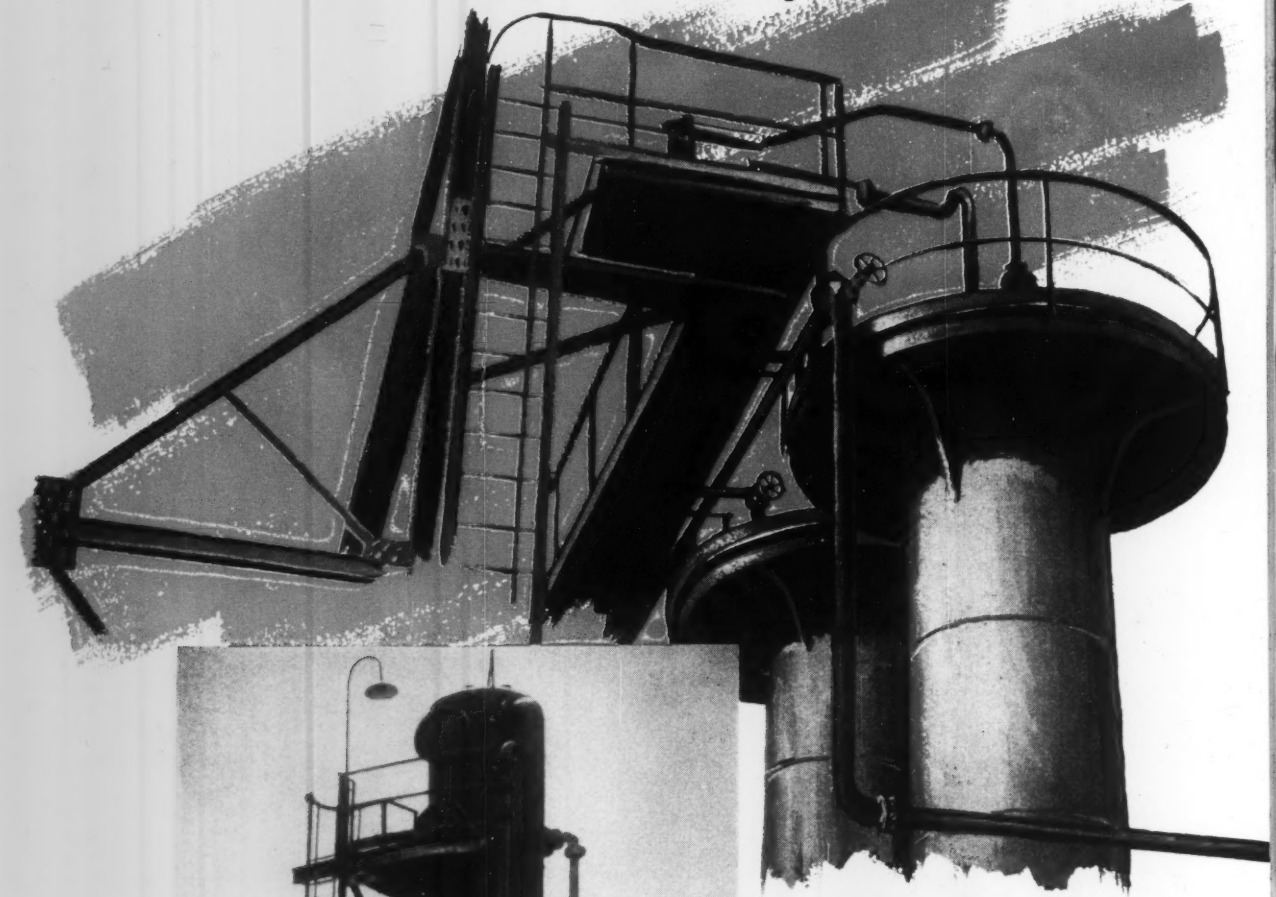
BLISS
SINCE 1857 ®

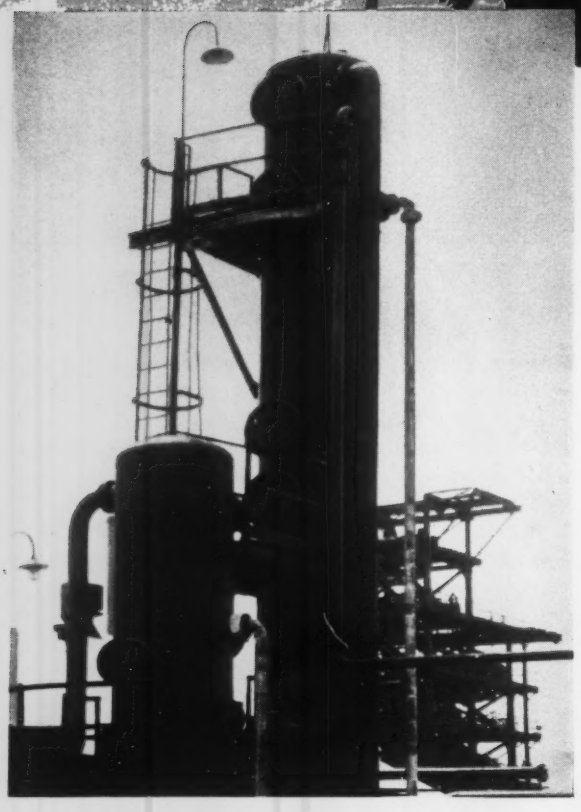
**E. W. BLISS COMPANY · Canton, Ohio**

*100 years of making metal work for mankind*

**PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.**

# HAYNES Alloys solve the *tough*



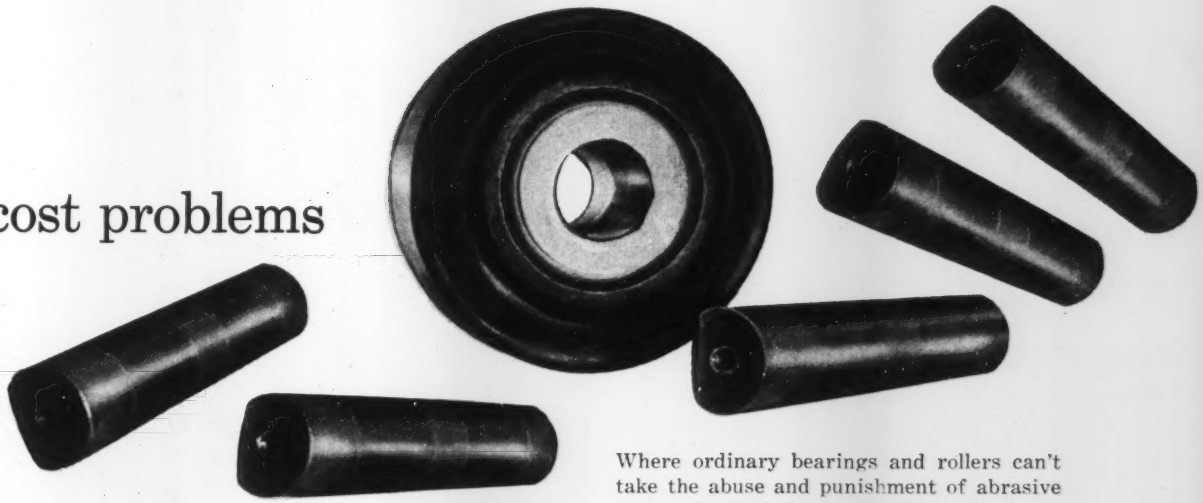


## CORROSION

HASTELLOY Alloy B has a service life 30 to 40 times that of ordinary materials while handling highly reactive hydrogen chloride gas at a chemical plant.

In petroleum, chemical, or food processing industries—wherever you find highly corrosive conditions—HAYNES Alloys are long-wearing and most economical.

# cost problems

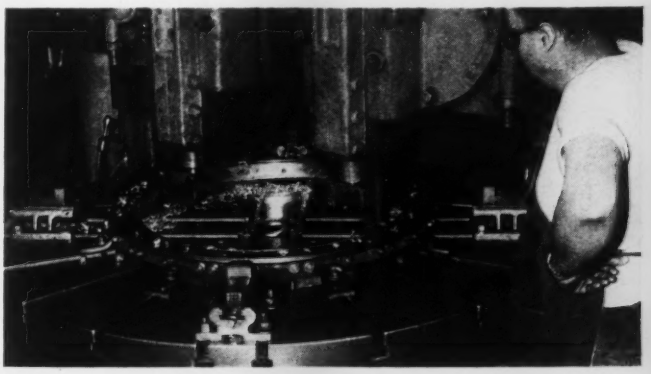


## ABRASION

Where ordinary bearings and rollers can't take the abuse and punishment of abrasive rock and acid sludge, such as in mining operations, they are hard-faced with HAYNES STELLITE Alloy No. 6 and last for years instead of weeks! HAYNES Alloys reduce maintenance and replacement costs by giving long service.

Wherever you have a *tough* cost problem due to maintenance or replacement expense caused by excessive wear, heat, or corrosion, or where there is a complex design or production problem—investigate the use of HAYNES Alloys.

In practically every industry, you will find HAYNES Alloys helping to increase production and reduce maintenance—doing an efficient job at low cost. For information on HAYNES Alloys, contact our nearest sales office or write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Sales Offices in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, and San Francisco.



## MACHINING

HAYNES STELLITE 98M2 alloy tools remove metal fast in machining jet engine diaphragm rings. These tools take a ½-in. cut and remove 55 cubic in. of metal in 15 minutes. About six rings now are machined per grind where other tools failed to finish even one. And tool service life has jumped over 600 per cent. Fast, precision machining with long tool life makes a big difference in production costs.

**HAYNES**
**ALLOYS**
**HAYNES STELLITE COMPANY**
*Division of Union Carbide Corporation*

UNION CARBIDE

"Haynes," "Haynes Stellite," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

there's so much to choose from at...

**HOTEL CLEVELAND**

**Cleveland Room**
Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

**Bronze Room**
One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

**Rib Room**
A true specialty restaurant
For Fabulous Roast Beef, roasted, carved and served to your order.

**MEN'S BAR**
Strictly stag — is this all male haven for good drinks, good food and good talk. Plus sports events on TV.

**TRANSIT BAR**
For rapid service in the most unique bar in the country . . decorated with an outstanding collection of miniature trains.

**the PATIO**
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

**Coffee Shop**
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

**Hotel Cleveland**
CLEVELAND, OHIO

WRITE OR CALL FOR YOUR RESERVATIONS NOW

**STEEL**
The Metalworking Weekly

**Editor-in-Chief, IRWIN H. SUCH**
Editor, WALTER J. CAMPBELL
Associate Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEY .....Market Editor
VAN CALDWELL .....Steel Plant Editor
HARRY CHANDLER .....Copy Editor
FRANK R. BRIGGS .....Associate Editor
ROBERT O. JAYNES .....Associate Editor
AUSTIN E. BRANT .....Associate Editor
BYRON E. KENNEL .....Associate Editor
ROSS WHITEHEAD .....Associate Editor
HORACE L. SAMFORD .....Associate Editor
GLENN W. DIETRICH .....Assistant Editor
ALLEN G. GRAY .....Technical Editor
ROBERT F. HUBER .....Machine Tool Editor
J. D. KNOX .....Consulting Editor
WILLIAM V. WALLACE JR. ..Assistant Editor
GEORGE J. HOWICK .....Assistant Editor
MARY T. BORGERHOFF .....Assistant Editor
MARY ALICE EARLY .....Assistant Editor
EILEEN CORTES .....Assistant Editor
MARY ANN STUVE .....Editorial Assistant
JANE WEDGE .....Editorial Assistant

BETTY ZAYAC, Editorial Assistant
THOMAS H. BRYAN, TOM WELSH, Art Editors
IRENE KASNER, Editorial Service

***Resident Editors***

New York 17 .....60 E. 42nd St.
B. K. PRICE, L. E. BROWNE
HAROLD B. WILSON
Murray Hill 2-2581

Chicago 11 .....520 N. Michigan Ave.
ERLE F. ROSS, WILLIAM E. DEAN
Whitehall 4-1234

Pittsburgh 19 .....2837 Koppers Bldg.
ROBERT M. LOVE—Atlantic 1-3211

Detroit 35 .....15800 W. McNichols Rd.
A. DONALD POSTMA
Broadway 3-8150

Washington 4 ....1123 National Press Bldg.
JOHN R. BOTZUM
Executive 3-6849

London, 2 Caxton St., Westminster S. W. 1
VINCENT DELPORT, European Editor

***Editorial Correspondents***

Birmingham—Birmingham 3-1121 R. W. KINCEY
Buffalo—Emerson 5385 ....GEORGE E. TOLES
Youngstown—Riverside 7-1471 ..GEO. R. REISS
Los Angeles—Webster 5-3040..NORMAN LYNN
San Francisco—Yukon 6-5151 EDWIN HAVERTY
Seattle—Melrose 1895 .....R. C. HILL
Cincinnati—Beechmont 1-9607....DICK HAVLIN
Toronto, Canada—Empire 4-9655..F. S. TOBIN
Birmingham, England .....J. A. HORTON
Paris, France .....LEON JAUDOIN-PROM
Brussels, Belgium .....PAUL DE KEYSER
Dusseldorf, Germany ....DR. HERBERT GROSS
St. Louis—Parkview 7-1712, MAC L. HUTCHENS

**BUSINESS STAFF**
Business Manager, D. C. KIEFER

Advertising Director .....H. G. ROWLAND
Advertising Service Mgr. ....DORIS MITCHELL
Production Manager .....A. V. ANDERSON
Classified Advertising .....EVELYN DIETZ
Promotion Director .....S. F. MARINO
Market Research Dir. ....N. R. LADABOUCHE
Circulation Director .....J. C. GERNHARD
Circulation Manager .....G. R. EBERSOLE
Reprints, JUNE SCHILENS

***Advertising Representatives***

New York 17 .....60 E. 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581

Wynnewood, Pa. (Phila.) 200 Wynnewood Ave.
WM. J. VERSCHOOR—Midway 2-6512

Farmington, Conn. .....12 Farmstead Lane
CALVIN FISHER JR., DANIEL J. ROWLAND
Orchard 7-1756

E. Rochester, N. Y. .....217 Ridgeview Dr.
HAROLD A. DENNIS—Browning 2105

Pittsburgh 19 .....2837 Koppers Bldg.
J. C. SULLIVAN—Atlantic 1-3211

Cleveland 13 .....Penton Bldg.
J. K. GILLAM, N. W. MANNING—Main 1-8260

Cincinnati 6 .....2215 Victory Pkwy.
E. L. FRANKE—Parkway 1-0711

Detroit 35 .....15800 W. McNichols Rd.
C. A. TALLINGER JR.—Broadway 3-8150

Chicago 11 .....520 N. Michigan Ave.
L. C. PELOTT, W. L. POLAND
WM. J. D'ALEXANDER, RICHARD BIRDSONG
Whitehall 4-1234

Los Angeles 36 .....5943 W. Colgate Ave.
F. J. FULLER—Webster 1-6865

San Francisco 4 .....57 Post St.
Robert W. Walker Co.—Sutter 1-5568

Griffin, Ga. .....1106 Pine Valley Rd.
FRED J. ALLEN—Griffin 7854

BPA

Published Every Monday By
**THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, O.**
**MAin 1-8260**

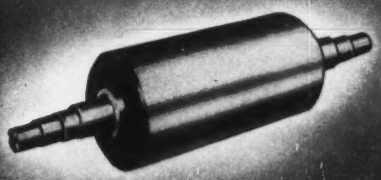
GEORGE O. HAYS .....President
RUSSELL C. JAENKE .....Executive Vice President
FRANK G. STEINEBACH ....Vice President and Secretary
FRANK O. RICE .....Vice President
JOSEPH P. LIPKA ....Treasurer and Assistant Secretary

NBP

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION
Member of Business Publications Audit of Circulation Inc., Society of Business Magazine Editors and National Business Publications Inc.

# "Y.F.&M." builds the best of them!

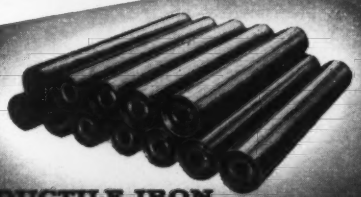
## INSIDE KNOWLEDGE OF STRIP MILL PROBLEMS



**PARALLOY**

HOT STRIP COILER ROLLS • COILER PINCH ROLLS
PICKLING LINE PINCH ROLLS • UPCOILER ROLLS
CLEANING LINE PINCH ROLLS • SINKER ROLLS
CARRIER ROLLS • TEMPER MILL TENSION REELS

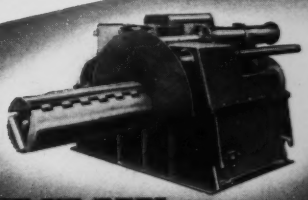
**PLUS**
more than
**70 YEARS**
**EXPERIENCE**
building what
you need



**DUCTILE IRON**

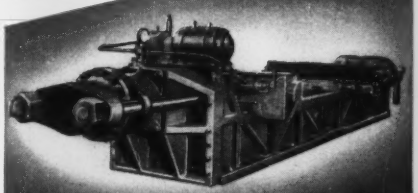
RUNOUT TABLE ROLLS
HOLDING TABLE ROLLS
LOOPER TABLE ROLLS
LOOPER TABLES
APRON PLATES

Ductile Iron Castings up to 50,000 lbs.



**TAKE UP REEL**

Complete Slitting Lines and Equipment



90" X 240" X 1/4"
STRETCHER LEVELER

AUTOMATIC
36" CONTOUR
ROLL LATHE

# YOUNGSTOWN

## HOT and COLD STRIP MILL MAINTENANCE SPECIALISTS

**"YOUNGSTOWN"** service is based on thorough understanding of strip mill problems and experience in solving them. For example, the problems of scratching, galling, pickup and excess wear are solved by the use of **PARALLOY ROLLS.** Their uniform hardness all through means you can roll more tonnage from new to scrap diameter. **"YF&M" DUCTILE IRON ROLLS** are the proven answers in overcoming heat check, warpage and cracking . . . especially good under the sprays. **"YOUNGSTOWN" MACHINERY** serves major steel mills from coast to coast.

***Consult us about your problems.***
***Let us quote on your requirements.***

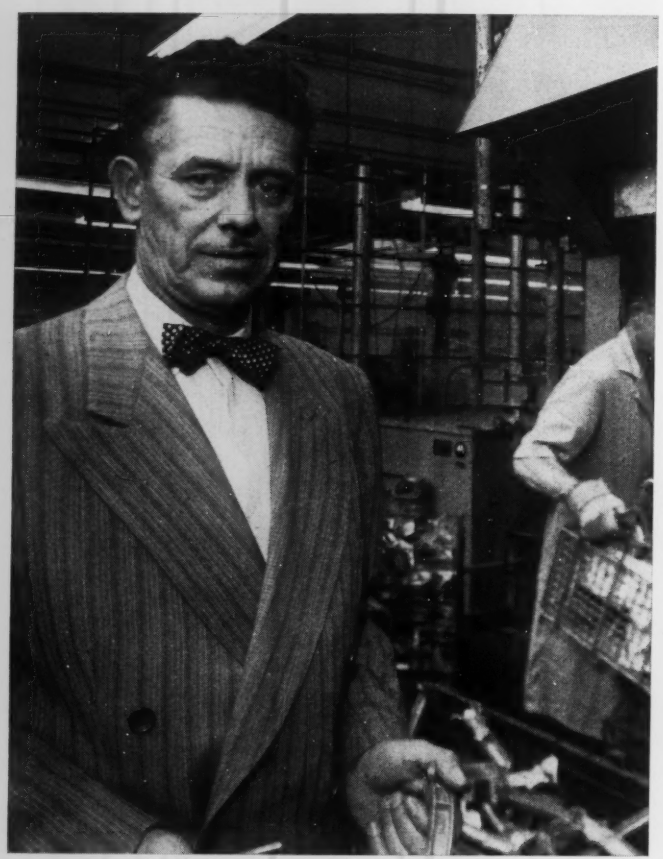
**The Youngstown Foundry & Machine Company**

SERVING INDUSTRY SINCE 1885

**Youngstown 1, Ohio**

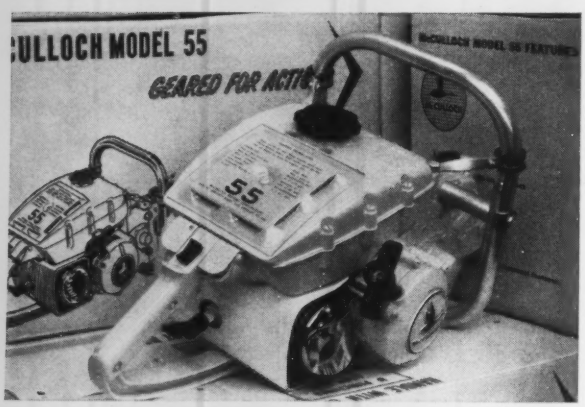
# "We switched over to Columbia-so far we've saved $2,100

*says Mr. Bernard Rosebrough*
*Plant Engineering Project Coordinator*
*McCulloch Motors Corporation*
*Los Angeles 45, California*



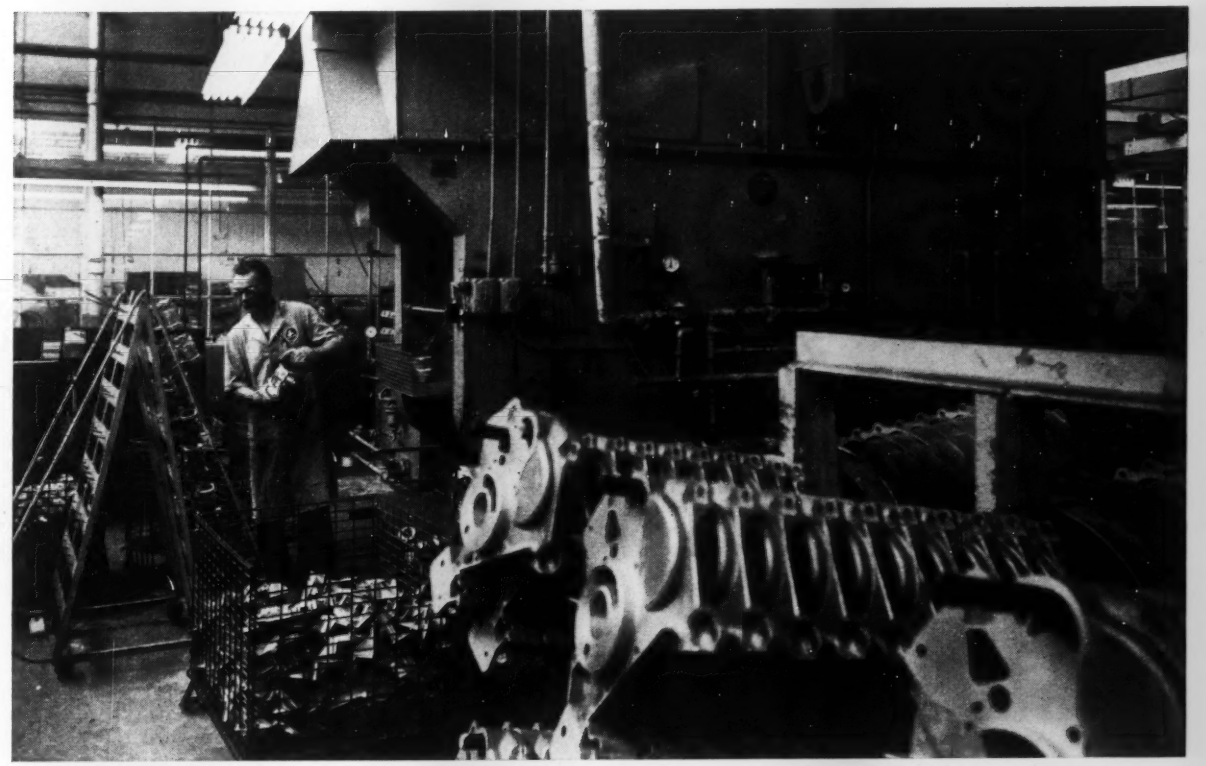
**"We'd tried four other degreasing solvents,** so I have a real basis for comparison. For example, in the 22 weeks since putting in Columbia-Southern Trichlorethylene, we've cleaned out each of our six units just once. With all the other solvents used, our degreasers needed cleanout and fresh solvent every three weeks. We now make one changeover, instead of eight for the same period. Our net savings on man-hours for maintenance alone, without counting loss of production, adds up to $2,100.

**"Here's the plant,** at 6101 West Century Boulevard. We produce our own line of McCulloch Chain Saws, Scott-Atwater Outboard Motors, Superchargers for custom cars, and four-cylinder drone engines for military target ships.




**"This is the Model 55,** one of our most popular chain saws. We run magnesium, aluminum and steel parts through the degreasers in producing all of our saws and other products. That's one reason why we insist on high solvent uniformity and purity.

# Southern Trichlor 22 weeks ago—just on maintenance alone!"



**"Here's the 'big boy'** of our six degreasing units. It's part of our sub-assembly operation. You can imagine what happens to production when it's shut down for cleanout. Figure two men for 16 hours to do a complete drain, clean, refill—see why I like a solvent that keeps a degreaser like this in action? Another big point. A year ago we had a fire in this unit that caused more than $6,000 damage. We believe that Columbia-Southern Trichlorethylene's stability makes it a safer solvent, and reduces fire hazard to a minimum.

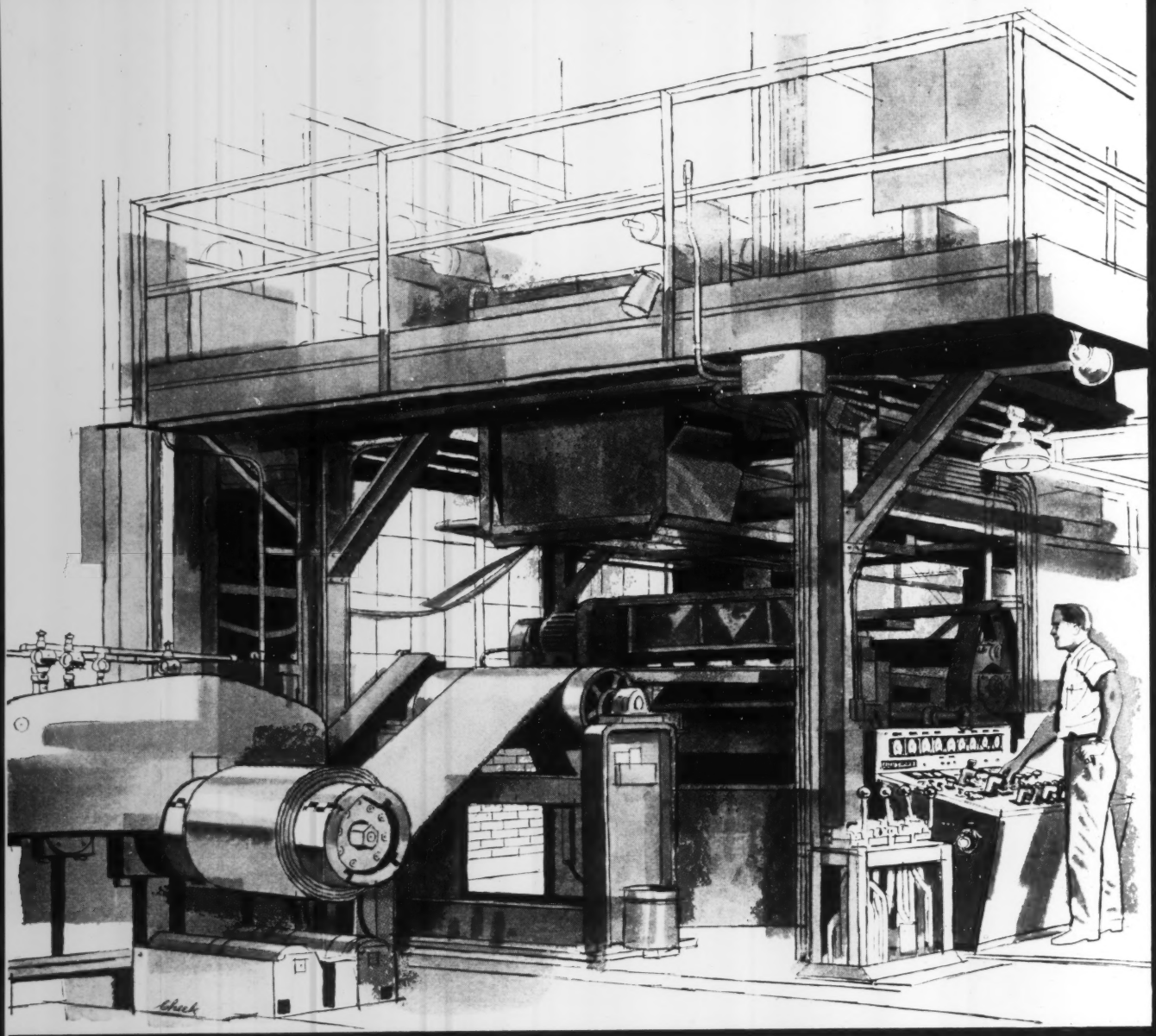
**"Look like I'm sold on one particular solvent?** Well, how about this: Columbia-Southern's Trichlor lets us operate our units ten degrees higher than we felt safe in going with any other solvent tested here. You know what this means: more contaminant saturation, faster cleaning, less solvent used. And I like the dependable delivery and good servicing the jobber and Columbia-Southern's District Sales Office provide."

**For more information, contact our Pittsburgh address or any of the fourteen Columbia-Southern District Sales Offices**

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco

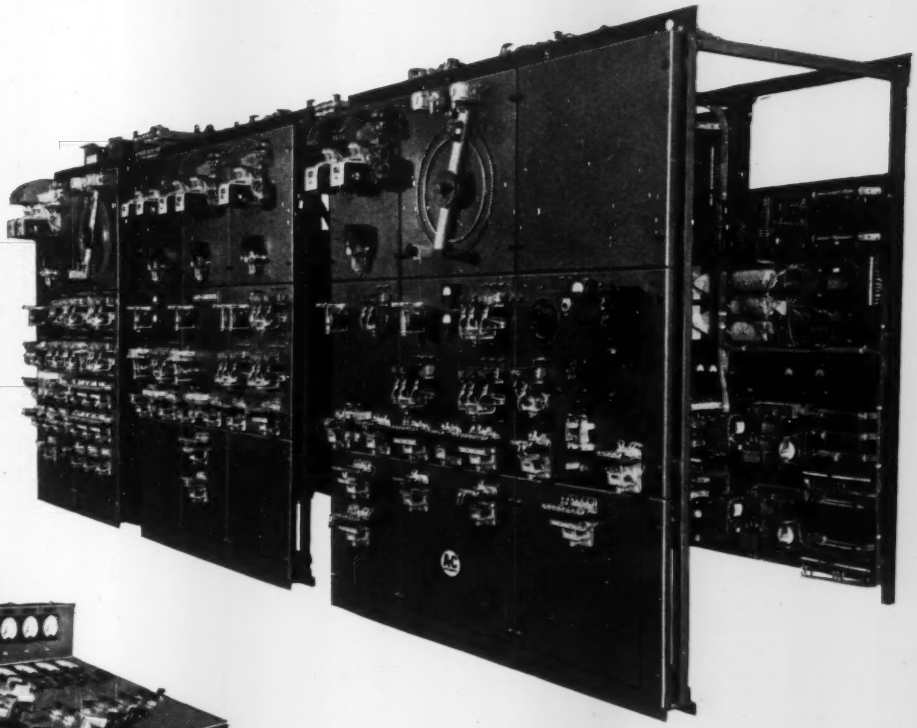
IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

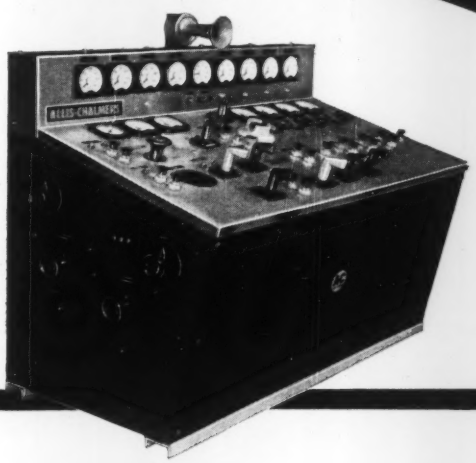


# ALLIS-CHALMERS CONTROL...

## *from furnace to finish*

# Here's positive tension control for your annealing line






**For the annealing line,** control by Allis-Chalmers features power-type magnetic amplifier regulators assuring accurate speed control and the most modern tension regulation. Engineered to work with this control are Allis-Chalmers motors and generators.

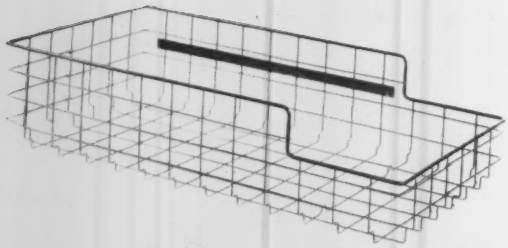
Allis-Chalmers builds control for every steel-making operation . . . right through the main mill to finishing. This overall system responsibility means just the *right* control for *each* job.

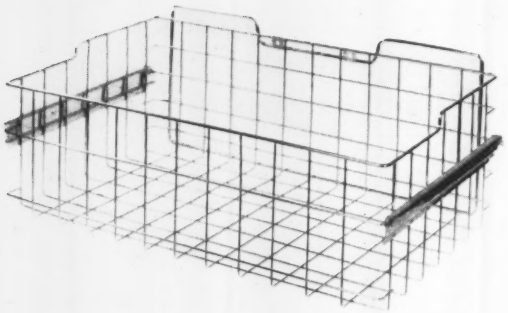
Here's why: Allis-Chalmers engineers first developed heavy duty control for main mill drives. Then, using the same quality components, they designed customized control for processing lines. The result — a complete line of control built to work throughout your mill with ultimate accuracy and dependability.

That's why Allis-Chalmers control is gaining more and more acceptance in the mills. Contact your A-C representative or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS** A-C ALLIS-CHALMERS

A-5449





# YOUNGSTOWN EXTRA SMOOTH CLEAN BRIGHT BASIC WIRE

## Plus Automated Fabrication Techniques Gives High Quality Production to *Bauer* Brothers

Over 75 years of production know-how combined with an excellent background of engineering experience enables the Bauer Brothers Co. of Springfield, Ohio, to provide their customers with economical, intelligent, up-to-the-minute wire product designs.

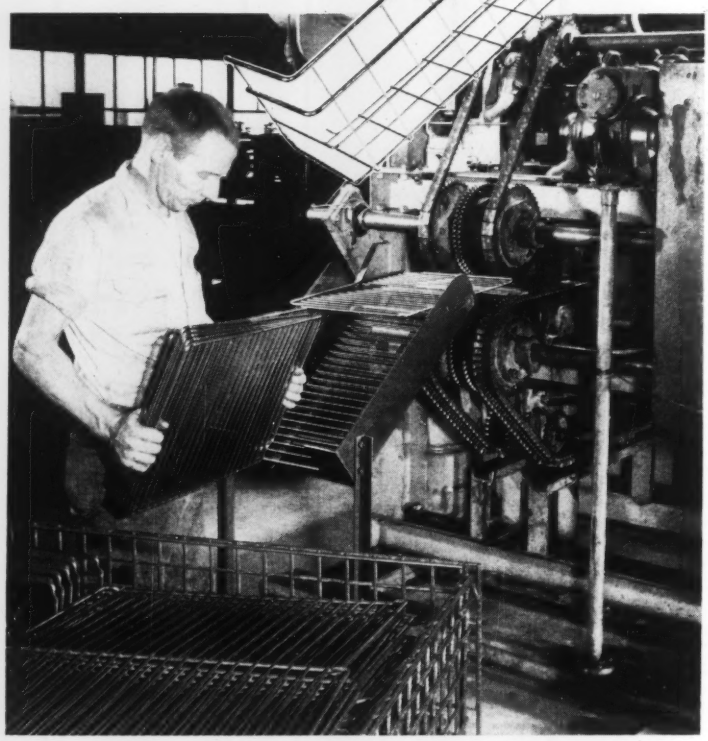
Using the latest techniques in "automation", this progressive fabricator relys on Youngstown's Extra Smooth Clean Bright Basic Industrial Quality Wire to keep both their production and product quality at a high level. They find it forms easily—while still providing the necessary rigidity and strength required in their finished products.

Its surface is free from all oil, dirt and grease which enables plating that's permanent—won't flake off. Also, it spot-welds fast and sure for permanent, strong construction. Why not make it your continuing specification for increased production and profits.

All Youngstown Wire is quality-controlled through each integrated operation from ore mining to final drawing. Thus, you can be sure there will be no injurious seams and piping, laps, die marks or internal tearing and cupping to hold up your production lines.

For additional information or metallurgical assistance, write or phone your nearest Youngstown District Sales Office today.

QUALITY YOUNGSTOWN SERVICE



Bauer's "Flying Dutchman" using Youngstown Extra Smooth Clean Bright Basic Wire automatically fabricates a frame into a finished shelf in only 60 seconds.

**THE YOUNGSTOWN SHEET AND TUBE COMPANY**

*Manufacturers of Carbon, Alloy and Yoloy Steel*
General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities

# CALENDAR
## OF MEETINGS

**Aug. 5-6, National Screw Machine Products Association.** National sales conference, Moraine hotel, Highland Park, Ill. Association's address: 2860 E. 130th St., Cleveland 20, O. Executive vice president: Orrin B. Werntz.

**Aug. 12-15, Society of Automotive Engineers:** West coast meeting, Olympic hotel, Seattle. Society's address: 485 Lexington Ave., New York 17, N.Y. Secretary: John A. C. Warner.

**Aug. 20-23, Western Electronic Show & Convention:** Cow Palace, San Francisco. Information: WESCON, 342 N. LaBrea, Los Angeles 36, Calif.

**Aug. 28-30, American Institute of Electrical Engineers:** Pacific general meeting, Chinook hotel, Yakima, Wash. Institute's address: 33 W. 39th St., New York 18, N.Y. Secretary: N. S. Hibshman.

**Sept. 8-11, National Metal Trades Association:** Eastern plant management conference, Essex-Sussex hotel, Spring Lake, N.J. Association's address: 337 W. Madison St., Chicago 6, Ill. Secretary: Charles L. Blatchford.

**Sept. 9-11, American Mining Congress:** Metals, mining and industrial minerals convention, Utah and Newhouse hotels, Salt Lake City, Utah. Congress' address: 1102 Ring Bldg., Washington 6, D.C. Executive vice president and secretary: Julian D. Conover.

**Sept. 9-12, Society of Automotive Engineers:** Tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N.Y. Secretary: John A. C. Warner.

**Sept. 9-13, Instrument Society of America:** Annual instrument - automation conference and exhibit, Public Auditorium, Cleveland. Society's address: 313 Sixth Ave., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

**Sept. 12-14, Automotive Parts Rebuilders Association:** Annual meeting and exhibit, Congress hotel, Chicago. Association's address: 220 S. State St., Chicago 4, Ill. Executive secretary: Jack O'Sullivan.

**Sept. 17-18, Radio-Electronics-Television Manufacturers Association:** National technical machine tool automation meeting, Ambassador hotel, Los Angeles, Calif. Association's address: 1721 DeSales St. N.W., Washington 6, D.C. Secretary: James D. Secrest.

**Sept. 17-20, American Die Casting Institute:** Annual meeting, Edgewater Beach hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N.Y. Secretary: David Laine.

**Sept. 18-20, National Industrial Conference Board:** Marketing meeting, Waldorf-Astoria hotel, New York. Board's address: 460 Park Ave., New York 22, N.Y. Secretary: Herbert S. Briggs.

**Sept. 21-24, Steel Founders' Society of America:** Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, O. Secretary: George K. Dreher.

**Sept. 22-24, American Machine Tool Distributors Association:** Annual meeting, Hotel Cleveland, Cleveland. Association's address: 1900 Arch St., Philadelphia 3, Pa. General manager: James C. Kelly.

**Sept. 22-25, American Institute of Wholesale Plumbing & Heating Supply Association Inc.:** Annual meeting, Waldorf-Astoria hotel, New York. Institute's address: 402 Albee Bldg., Washington 5, D. C. Executive secretary: George T. Underwood.

what's in a name?

To these proud parents there's only one "Johnny"!

In the field of metal abrasives, there's only one "MALLEABRASIVE", and that's our baby!

"MALLEABRASIVE" is the name of the world's first malleablized abrasive, researched and developed by Globe and famous Battelle Memorial Institute.

No other metal abrasive is the same because only Globe uses the complete process which gives Malleabrasive its own distinctive metallurgical structure.

What's in a name? Just this — the name MALLEABRASIVE represents a standard of excellence that prompts Malleabrasive users to ask, "Is it as good as Malleabrasive?" when urged to buy something similar.

*Sold by Pangborn Corporation, and by leading distributors of foundry supplies from coast to coast.*

MALLEABRASIVE

THE GLOBE STEEL ABRASIVE CO., MANSFIELD, OHIO ®

1907—Fiftieth Anniversary—1957

READ THIS AND...

# YOU BE THE JUDGE

OF THE IMPORTANCE OF SPECIFYING

LYNCHBURG FOUNDRY

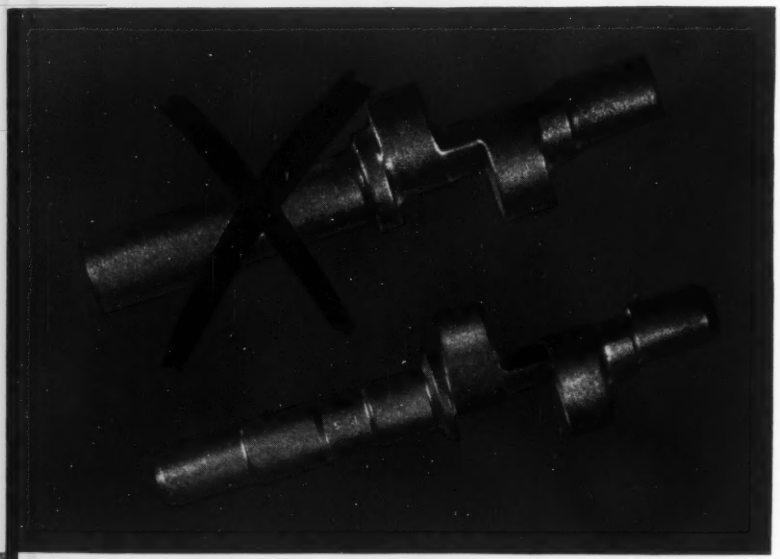
# SHELL CASTINGS

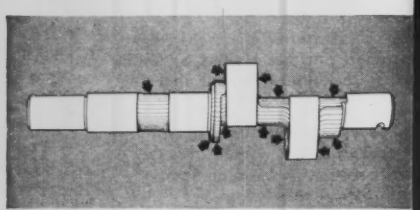
**GREATER UNIFORMITY**—A must with today's high-speed automatic machine tools—it means less fixturing time, lower machine shop losses, and less balancing when required.

**LESS MACHINING**—Close control of dimensions means less machining, faster machining methods, or in some instances elimination of machining altogether.

**MADE FOR LIGHT TRAVEL**—Less machine stock means reduced weight—lowering transportation costs both in shipment and within the factory.

**SUPERIOR SURFACE FINISH**—Shell castings have "eye appeal"—their surface dresses up any finished product. Further, a smooth finish reduces wear on machine tools.





No machining is required on the surfaces indicated by arrows when this refrigeration crankshaft is shell molded.

Exhibit A in the case for shell molding is this refrigeration crankshaft. It may look like a relatively simple piece but machining it was a chore. For every one of the various surfaces a different machining operation had to be performed. Shell molding's smooth finish and close dimensional accuracy meant that a total of twelve (count 'em in the diagram at the left) surfaces could be used as cast. That's twelve time-consuming and costly machining operations eliminated.

Consider, too, the extra stock that had to be machined off when the shell molding process was not used. The original crankshaft before machining weighed 3.5 pounds while the shell molded crankshaft weighs but 2.5 pounds—a tremendous saving in transportation costs when you consider large quantities!

You be the judge. A number of different types of crankshafts are being shell molded in both gray and ductile iron at Lynchburg Foundry. Your verdict? Why not specify Lynchburg Foundry Shell Castings.

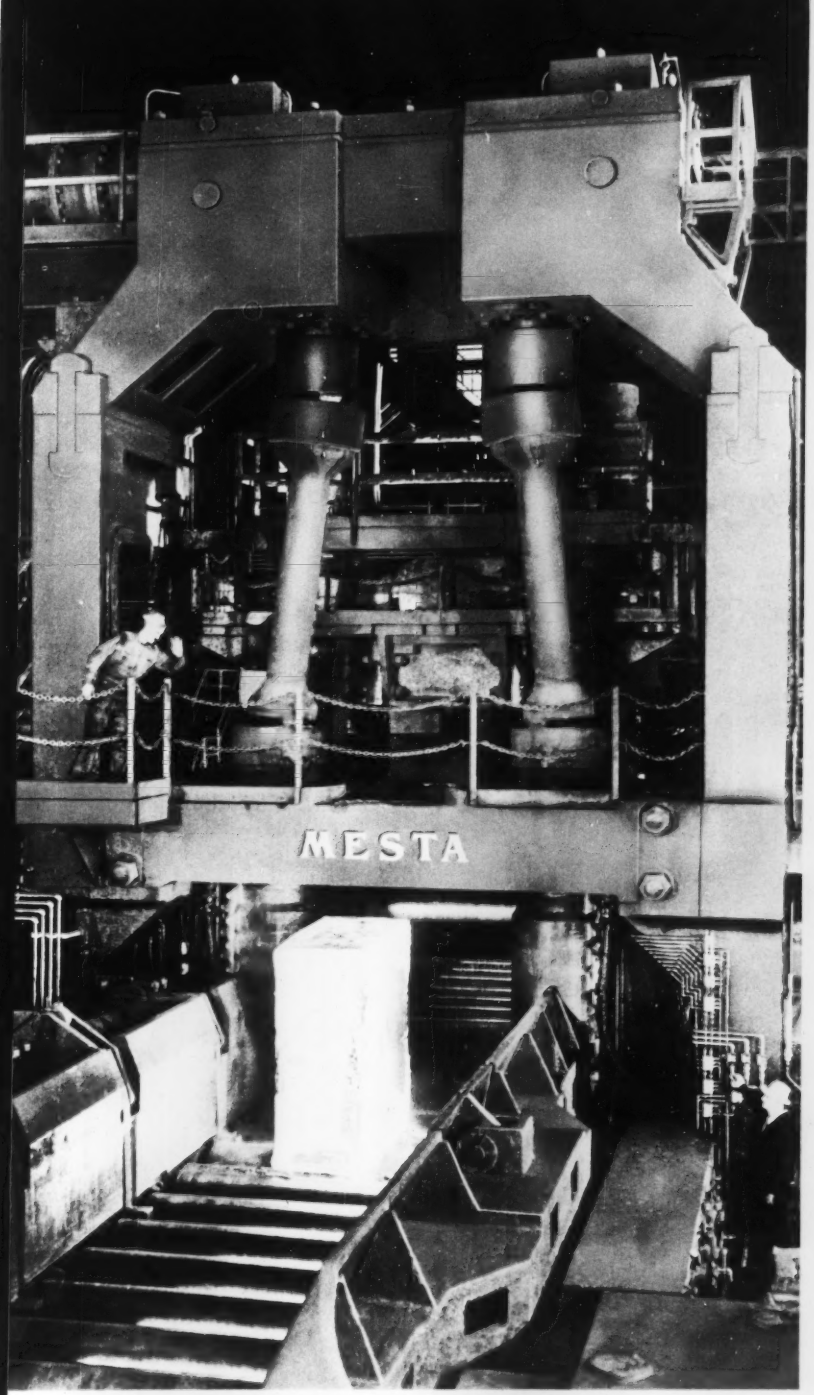
**GRAY IRON AND DUCTILE IRON—**

**Heat treated or as cast**

**LYNCHBURG FOUNDRY CO., Lynchburg, Virginia**

DISTRICT SALES OFFICES:

50 BROAD ST., NEW YORK, N.Y. • 122 SOUTH MICHIGAN AVE., CHICAGO, ILL. • 1783 E. 11TH ST., CLEVELAND, OHIO




Knocking down an ingot on schedule places heavy demands on your primary reversing mill. Drives and auxiliary equipment take rough abuse. To give you an edge in meeting demands, Westinghouse drives are engineered from long experience. New advances in Westinghouse automatic controls and coordinated auxiliary equipment keep your mill on schedule. MP-3051

**Experienced engineering and development**

# KEY TO HIGHER TONNAGE

**...with Westinghouse-equipped reversing mills**

YOU CAN BE SURE...IF IT'S Westinghouse

Dependability is tailor made

# Experience tailors each drive

Today, reversing mill drive equipment takes heavier abuse than ever before. Growing operating and tonnage requirements can't be met by yesterday's set of standards. That's why experienced engineering at Westinghouse tailors each drive to the specific mill. In this way, you can be sure of top performance, maximum accessibility to all parts of the drive, and rugged construction quality for reliability today and long into the future.

The Westinghouse reversing mill drive, at right, is a good example. Main drive is a 12,000 hp., 40 80 rpm double-armature twin motor. Edger drive (top) is a 4,000 hp., 60 150 rpm double-armature motor. Time-saving accessibility is provided by: 1) large walk-in endbells, 2) extra space for brush accessibility, both radially and axially, and 3) absence of baffle restrictions between the commutator area and the stator or rotor windings.

**Heavy-duty thrust bearings** are located at the mill end of the main drive pedestal bearings to permit easy, routine inspections. Removable end-case permits complete inspection and maintenance without disturbing either journal bearing or bearing cap.

**Rugged construction** of the Westinghouse reversing mill drive incorporates heavy-duty bedplates supported on concrete foundations. Pedestal cap bolts and base bolts extend deep into foundation concrete. Mill-end bearings are supported by massive pedestals using foundation keys. Each armature coil is rigidly and individually braced, front and rear. Armature coil cross connections are securly encased in a steel box at the rear of the rotor and flexibly connected to armature coils.

**Oscillotrol (R)** thrust oil-damper system effectively damps out rotor oscillations caused by pulses from mill-spindle coupling action on twin-drive motors.

MP-3051

**YOU CAN BE SURE... IF IT'S Westinghouse**

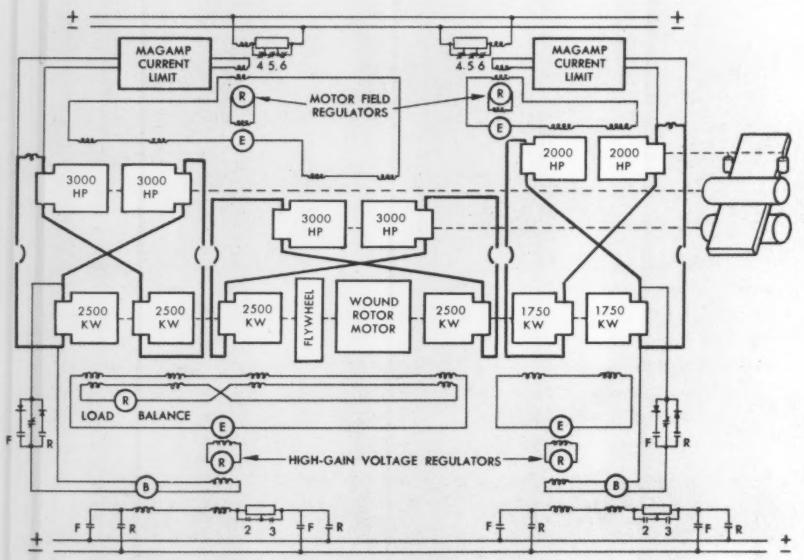
## SYSTEM FEATURES

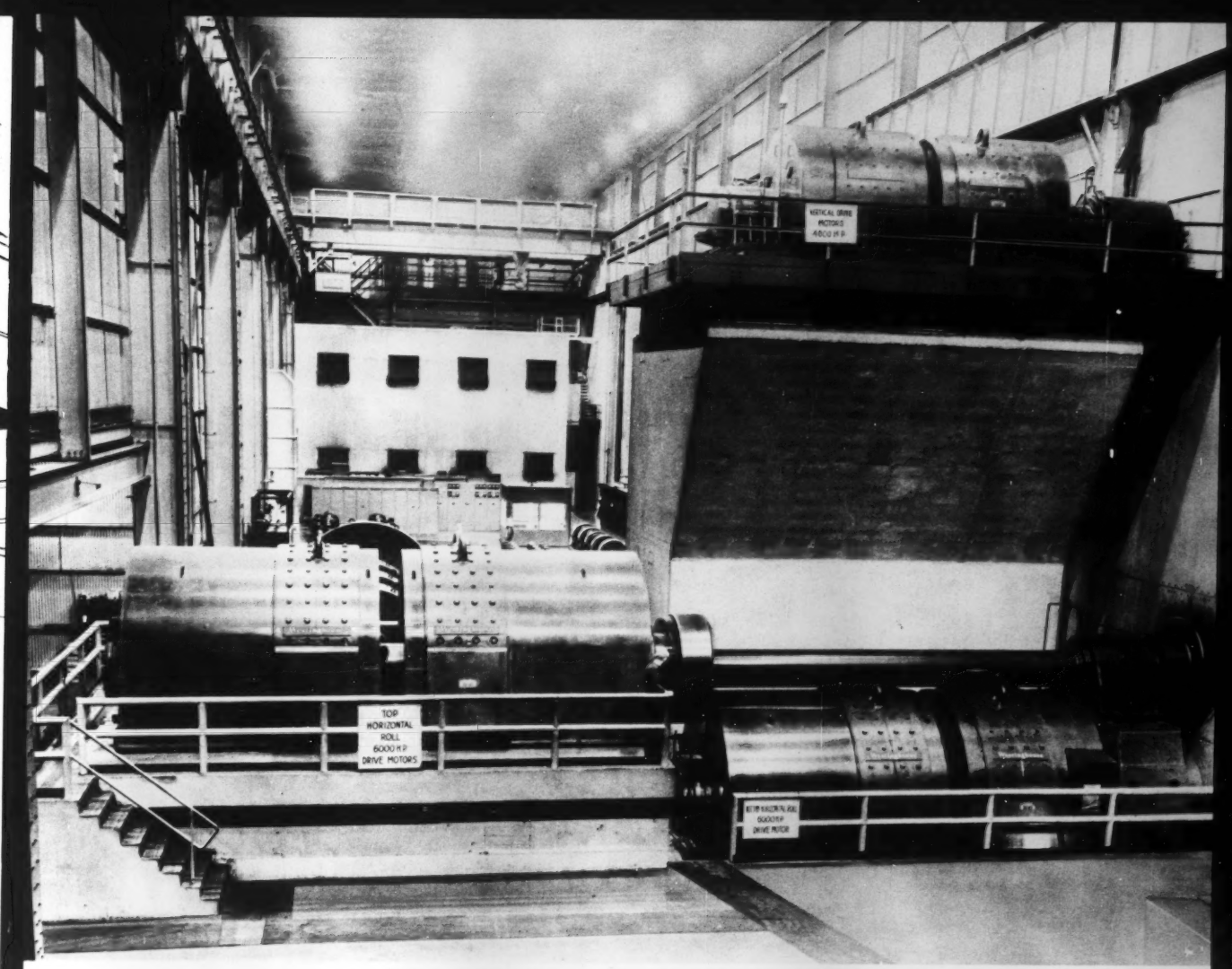
**Sandwich series** loops are used for each of the pairs of double-armature twin-drive motors and for the double-armature edger motor to minimize the number of circuit breakers and load balance equipment. A load balance regulator excites auxiliary fields on the 2500 kw generators to balance the twin-drive motor loads.

**High-gain voltage** regulators excite generators to give fast changes in response to the operator's controls.

**Motor field regulators** excite motors to give changes in speed by motor-field control.

**MAGAMP (R)** (magnetic amplifier) current-limit regulator builds up motor field strength to increase the torque per ampere for loads approaching 200%.






Typical reversing mill drive using 12,000 hp, 40/80 rpm double-armature twin motor. Edger drive (top) is 4,000 hp, 60/150 rpm double-armature motor.

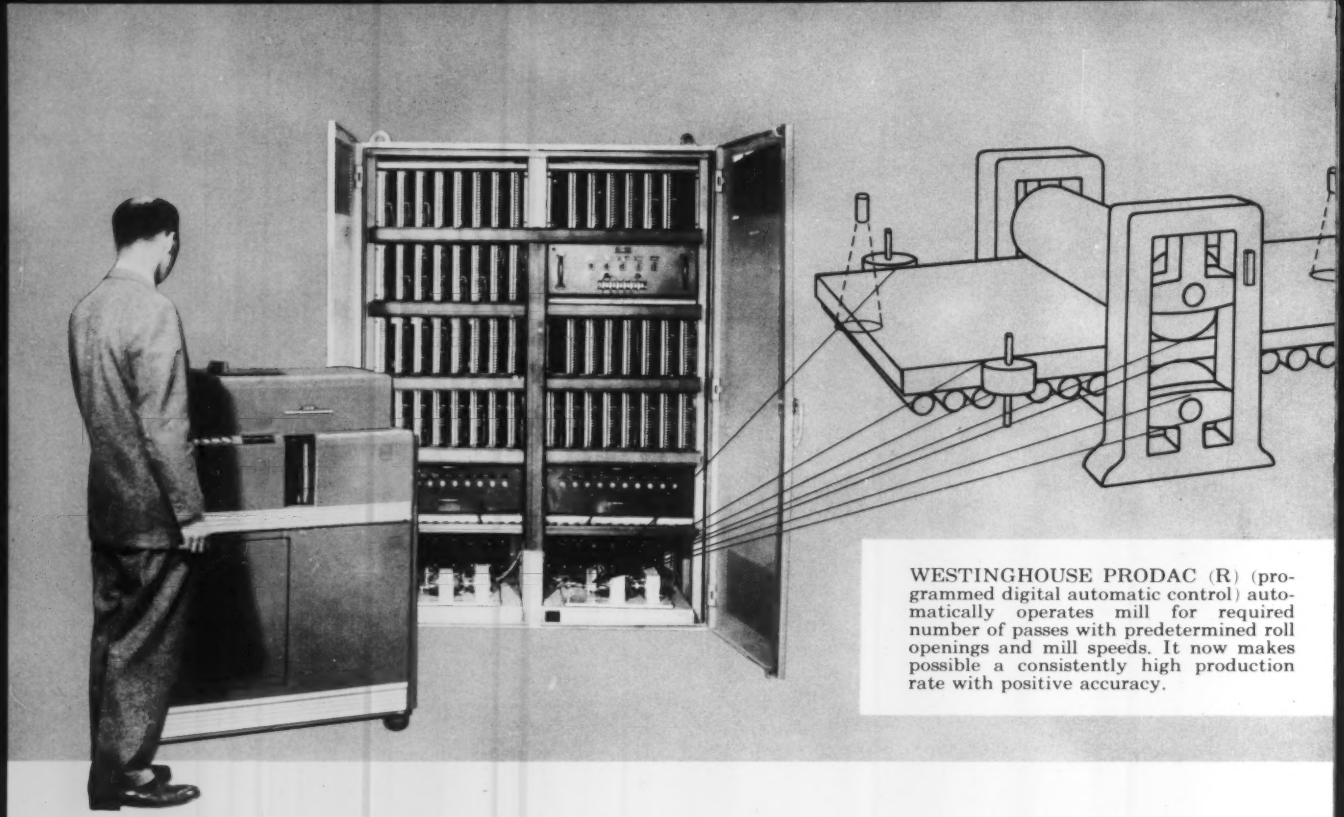
## WESTINGHOUSE EQUIPMENT SERVES THESE USERS

| YEAR | CUSTOMER | LOCATION | MILL | HP | RPM |
|---|---|---|---|---|---|
| 1951 | U. S. Steel Corporation | Fairless Hills, Pa. | 40" Blooming Mill | 8000* | 65/130 |
| 1951 | ☆Sheffield Steel Division | Kansas City, Mo. | 32" Blooming Mill | 4000 | 60/150 |
| 1951 | Laclede Steel Company | Alton, Illinois | 35" Blooming Mill | 5000 | 60/150 |
| 1951 | Dow Chemical Company | Madison, Illinois | 84" Reversing Mill | 6000 | 55/156 |
| 1951 | U. S. Steel Corporation | Morrisville, Pa. | Universal Slabbing Mill | 12000*† | 40/80 |
| 1951 | °Great Lakes Steel Corporation | Detroit, Michigan | Universal Slabbing Mill | 12000*† | 40/80 |
| 1953 | Reynolds Metals Company | McCook, Illinois | 144" Taper Mill | 3000 | 125/250 |
| 1954 | Inland Steel Company | Indiana Harbor, Ill. | Wide Flange Beam Mill | 7000† | 80/160 |
| 1955 | Aluminum Co. of America | Davenport, Iowa | 160" Slabbing Mill | 7000* | 30/60 |
| 1955 | Empressa Nacional Siderurgica | Spain | 132" Plate Mill | 7000* | 40/80 |
| 1955 | Jones & Laughlin Steel Corp. | Cleveland, Ohio | Slabbing Mill | 10000* | 40/100 |
| 1955 | Kaiser Al. & Chem. Corp. | Ravenswood, W. Va. | 168" Slabbing Mill | 10000*† | 30/60 |
| 1955 | Kaiser Al. & Chem. Corp. | Ravenswood, W. Va. | 110" Slabbing Mill | 6000 | 30/60 |
| 1955 | Republic Steel Corp. | Cleveland, Ohio | Universal Slabbing Mill | 12000* | 40/80 |
| 1955 | Jones & Laughlin Steel Corp. | Aliquippa, Pa. | Reversing Rougher | 6000* | 40/100 |
| 1955 | Jones & Laughlin Steel Corp. | Cleveland, Ohio | Reversing Rougher | 8000* | 40/80 |
| 1955 | Crucible Steel Co. of America | Midland, Pa. | Roughing Mill | 3500 | 50/150 |
| 1955 | Armco Steel Corporation | Butler, Pa. | Reversing Rougher | 7000 | 40/100 |
| 1956 | U. S. Steel Corporation | South Chicago, Illinois | Blooming Mill | 12000*† | 40/80 |
| 1956 | U. S. Steel Corporation | Gary, Indiana | Universal Slabbing Mill | 12000*† | 40/80 |
| 1956 | Altos Hornos | Mexico | Blooming Mill | 6000* | 40/80 |
| 1956 | Large Eastern Steel Company | | Blooming Mill | 3000 | 60/150 |
| 1956 | Reynolds Metals Company | Listerhill, Alabama | 170" Slabbing Mill | 7000* | 30/60 |
| 1956 | Tata Iron & Steel | India | Reversing Rougher | 3500* | 60/150 |
| 1956 | Kaiser Steel Company | Fontana, California | 90" Slabbing Mill | 10000* | 40/100 |
| 1956 | Olin Mathieson Chem. Corp. | Omal, Ohio | 96" Slabbing Mill | 5000 | 35/70 |
| 1956 | Empire Steel Corporation | Mansfield, Ohio | Reversing Rougher | 5000 | 50/120 |

☆Armco Steel Corp. °Division of National Steel Corp. *Twin Drive †Double Armature

MP-3051

Auxiliary equipment takes over more responsibility



WESTINGHOUSE PRODAC (R) (programmed digital automatic control) automatically operates mill for required number of passes with predetermined roll openings and mill speeds. It now makes possible a consistently high production rate with positive accuracy.

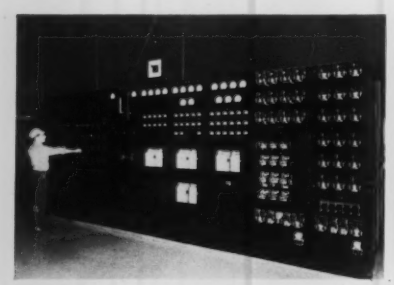
# Reversing mills are more precise, automatic with Westinghouse auxiliaries

Continued research and development by Westinghouse helps to make your operations more precise and automatic. A recent example is PRODAC control. It makes possible the first completely automatic mill with card-programmed rolling information.

Unmatched Westinghouse engineering for high-tonnage reversing mill operation is at your service . . . from planning to design, installation and start-up. A skilled Westinghouse team will accept unit responsibility and work with you and your consulting engineers.

Contact your Westinghouse sales office for further details . . . Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa.

MP-3051

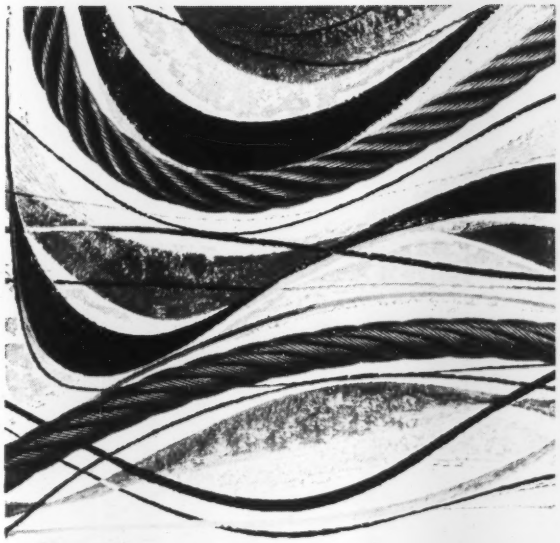


**WESTINGHOUSE** main-drive control panels provide centralized start-up switches for fans and motor-generator sets, and metering for power and regulating circuits.

**WESTINGHOUSE** variable voltage control for all auxiliaries minimizes handling time. Transfer switches and emergency bus arrangement afford relief in case of generator failure.

**MCT600 INDIVIDUAL TABLE ROLL MOTOR,** silicone insulated; drives mill tables directly; in ratings at 230 volts; frame sizes from 604 to 618; 3.75 hp to 50 hp, 157 rpm to 85 rpm.

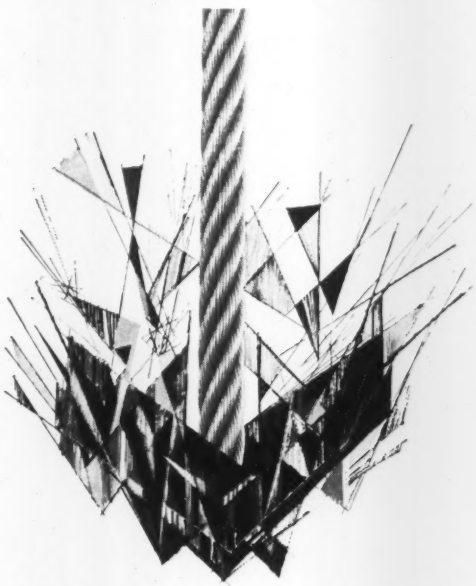
YOU CAN BE SURE...IF IT'S Westinghouse



Stands up to **bending fatigue**

Absorbs **shock** and **impact**

Has **higher strength**



Withstands **Abrasion**

These four qualities
in Roebling Royal Blue Wire Rope
mean **longer service life!**

They all add up to the fact that Roebling Royal Blue will deliver more work on your job—regardless of what it is. It's as simple and money-saving as that. For full information on Royal Blue, the rope that's stronger than yesterday's strongest, talk to your Roebling Distributor or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

**ROEBLING**

*Branch Offices in Principal Cities—*
*Subsidiary of The Colorado Fuel and Iron Corporation*

# in muffler manufacturing REPUBLIC

Deep-drawing is but one of several operations in fabricating mufflers for cars, trucks, and tractors performed by Mackenzie Muffler Company, Inc., of Youngstown, Ohio. Republic Continuous Galvanized meets all requirements and provides low-cost protection. If you manufacture a product subject to corrosion, investigate Republic Continuous Galvanized.

# REPUBLIC

REPUBLIC STEEL (R)

*World's Widest Range of Standard Steels*

# CONTINUOUS GALVANIZED

## ...meets all fabricating requirements ...provides low cost protection!

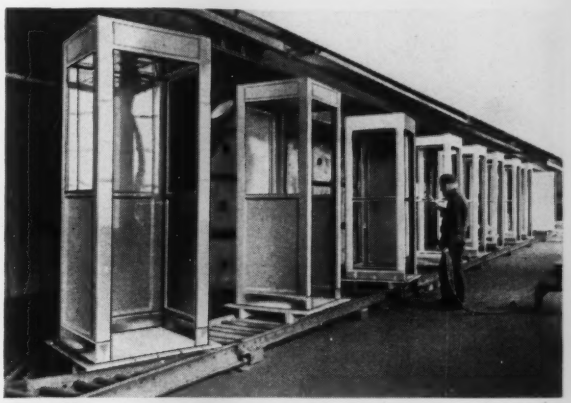
Now, any fabricator can get finest zinc coating protection at low cost with Republic Continuous Galvanized Steel. And under toughest manufacturing conditions, this coating will not crack, flake or peel in any forming process permitted by the base metal.

Even after deep-drawing, like this muffler-manufacturing operation at Mackenzie Muffler Company, Inc., of Youngstown, Ohio, Republic Continuous Galvanized provides outstanding corrosion resistance—the basis for long, low-cost protection in service for users.

Republic Continuous Galvanized cuts manufacturing costs, too. It eliminates costly hot dip operations, permits continuous uninterrupted fabricating. It is available in a wide range of sizes, gages and grades, in sheets and coils.

If you have a product which will benefit by low-cost galvanized protection, get all the facts on Republic Continuous Galvanized from your Republic representative. Or, mail coupon for complete facts, today!

**REPUBLIC ENDURO® STAINLESS STEEL** combines excellent forming and working qualities with bright, lasting beauty. If you fabricate a product for home or industry requiring strength, toughness, abrasion- and high heat-resistance, minimum maintenance, send coupon for additional Republic ENDURO Stainless Steel information.



**REPUBLIC ELECTRO PAINTLOK®** provides a paint-holding surface ready for finishing. Only a minimum of cleaning is necessary. In many cases priming operations can be eliminated. Soon, these attractive telephone booths will be installed in convenient locations. For more Republic Electro Paintlok information, send coupon.

**REPUBLIC STEEL CORPORATION**
**DEPT. C-3848**
**3120 EAST 45th STREET • CLEVELAND 27, OHIO**

Please send me further information on the following Republic products:

- ☐ Continuous Galvanized Steel
- ☐ Electro Paintlok Sheets
- ☐ ENDURO Stainless Steel

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

**STEEL**

*and Steel Products*

# Inland Ledloy*...the original leaded steels

Nearly twenty years ago, Inland started a metalworking revolution with its discovery of how to add lead to steel. The first experimental heat and the first production heat of leaded steels were made in Inland furnaces. Since then, by unending probing, refining, and perfecting, Inland has learned the secrets of making fine leaded steels. Today, Inland, the largest producer of leaded steels, sets the standards with which all other free machining steels are compared.

These Inland Quality Control men are checking the results of a "sweat-test." Samples of billets of Ledloy are baked in an electric oven. Then, the minute drops of lead which rise to the surface are checked for uniformity of size and dispersion. Billets that do not meet Inland's rigid standards are rejected. It is one of many controls Inland uses to make certain your Ledloy is the finest leaded steel made.

Because of Inland's long history in making leaded steels, technicians like these know... *by experience* ... that your Ledloy will be right. Inland standards, worked out through many years, are your assurance that the Ledloy represented by these samples will be another shipment of the world's most machinable steels.

# Experience makes Inland Ledloy better

*INLAND LEDLOY is sold in cold drawn form, under various trade names, by leading cold drawers and steel warehouses from coast to coast.*

**INLAND STEEL COMPANY** *38 South Dearborn Street • Chicago, Illinois Sales Offices: Chicago, Milwaukee, St. Paul, Davenport, St. Louis, Kansas City, Indianapolis, Detroit, New York • *registered trade name of Inland Steel Company, pioneer in the development of leaded steels.*

# FOR QUALITY THAT PAYS OFF

## on the production line specify—

# SEALMASTER

## BALL BEARING UNITS

### for the machinery you build or buy!

**ZONE HARDENING**—Provides positive race-to-shaft locking, eliminating shaft wear and reducing fretting corrosion.

**LAND-RIDDEN BALL RETAINER**—Spaces balls accurately for proper distribution of radial and thrust loads—traps grease and prevents "churning" of grease.

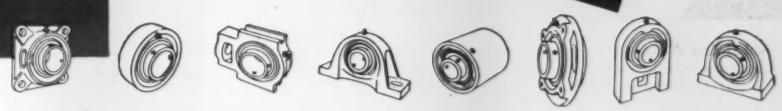
**LABYRINTH SEAL**—Keeps dust, dirt out—lubrication in.

**LOCKING PIN & PERIMETER DIMPLE**—Assures positive lubrication while permitting several degrees of misalignment in any direction. Misalignment of shaft cannot interfere with effectiveness of seal.

Today's production machinery has become larger, more complicated and more expensive. Most machines feature automation and are designed to relieve man of much of the effort and fatigue formerly required to operate and keep them operating continuously. If "downtime" is to be kept at a minimum and fast precision production is to be maintained, precision components logically fit into the picture. The more highly mechanized machinery becomes, the more important is the exclusive combination of features provided in SEALMASTER Ball Bearing Units. These features assure new high standards of bearing performance. You'll want full information on these and other SEALMASTER features.

SEALMASTER
BALL BEARING UNITS

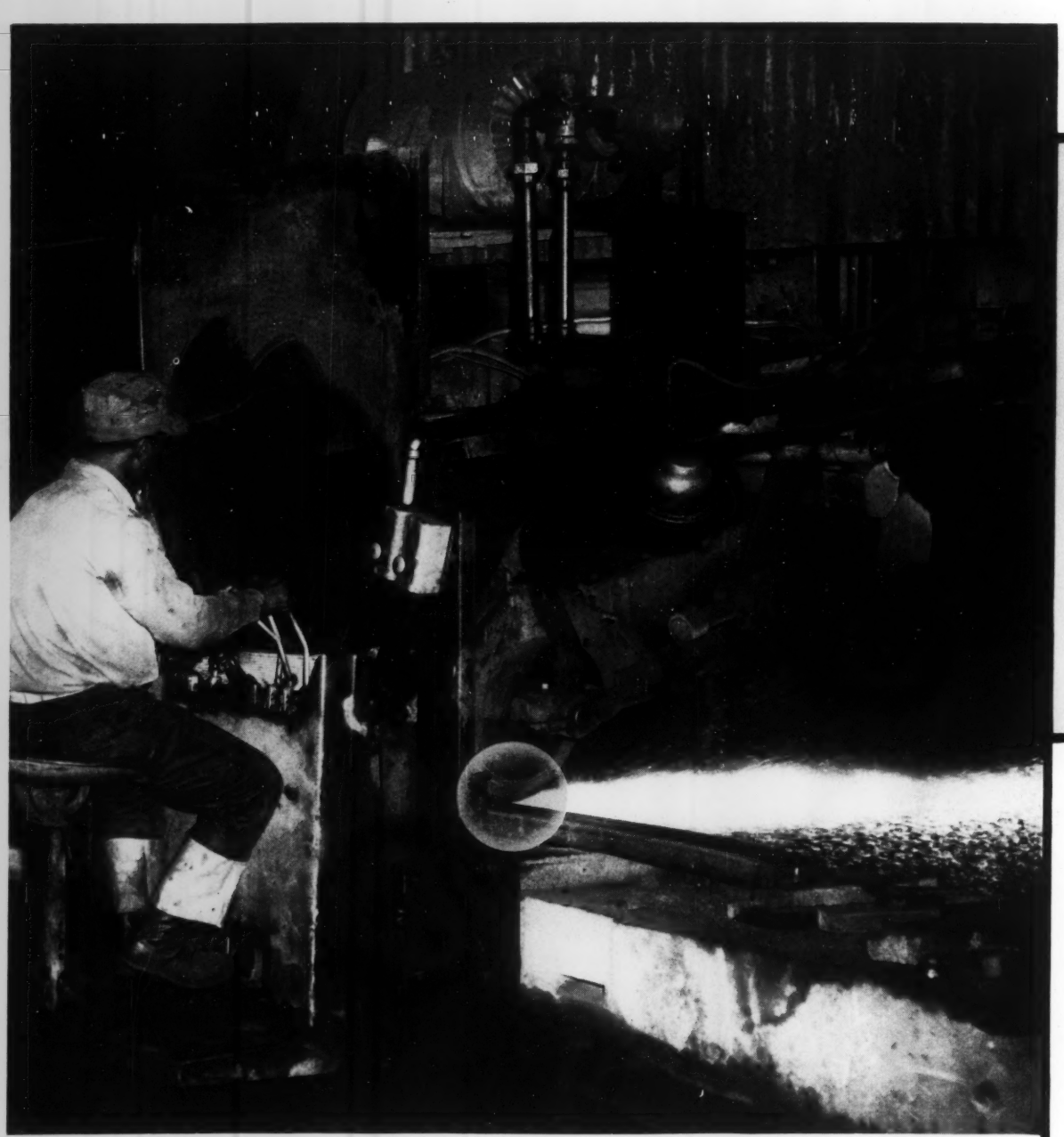
Write for Bulletin 454



SEALMASTER BEARINGS A DIVISION OF STEPHENS-ADAMSON MFG. CO. • 99 RIDGEWAY AVE., AURORA, ILLINOIS

*In conditioning alloy steel...*

# 44 ALUNDUM* BZZ wheels have



**Vital On Automatic Grinders.** Where pressures are high and operation is continuous, grinding wheel performance is particularly important. That's why the longer life and faster, freer cutting action of 44 ALUNDUM BZZ wheels mean big new savings — in time and money — on any machines of this type.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

# never been matched for economy

## *New Norton abrasive-and-bond team scores the real "Touch of Gold" — with easiest, lowest cost grinding*

**Operators Like Them, Too.** Men using swing frames appreciate the easy, fast-cutting action of 44 ALUNDUM BZZ wheels and their high strength. It reduces fatigue for *them* — which means increased hourly production and higher profits for *you*.

Grind your alloy steel billets, slabs, sheet bars and strips with 44 ALUNDUM BZZ wheels and you get the advantages of two revolutionary Norton developments.

The non-premium priced 44 ALUNDUM abrasive and the outstanding BZZ bond bring you a combination never before equalled by any ordinary aluminum oxide abrasive or any other resinoid bond. Results are big advancements in performance and service life — "Touch of Gold" benefits that improve your product quality, boost your production rate and cut your grinding costs.

*Mills Can Tell You . . .*

that 44 ALUNDUM BZZ wheels pay off in real savings every month. Based on 4% stock removal (80 pounds per ton) an estimate of 2¢ per pound lower grinding costs means savings of $8,000 each month on a 5,000 ton production. But that's a very conservative figure, because many mills have saved several times 2¢ per pound.

Let us prove how 44 ALUNDUM BZZ wheels can add advantages like these to your own alloy steel conditioning. Contact the nearest Norton office or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors all around the world.

W-1807

**NORTON**

**ABRASIVES**

*Making better products . . . to make your products better*

**NORTON PRODUCTS**

Abrasives • Grinding Wheels • Grinding Machines • Refractories

**BEHR-MANNING DIVISION**

Coated Abrasives • Sharpening Stones • Behr-cat Tapes

# *Quantity*
# PRODUCTION
## *of*
## GREY IRON CASTINGS

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

ESTABLISHED 1866

**THE WHELAND COMPANY**
**FOUNDRY DIVISION**

MAIN OFFICE AND MANUFACTURING PLANTS
**CHATTANOOGA 2, TENNESSEE**

This Bliss 4-high reversing mill is the principal unit in National Cash Register's new cold rolling department.

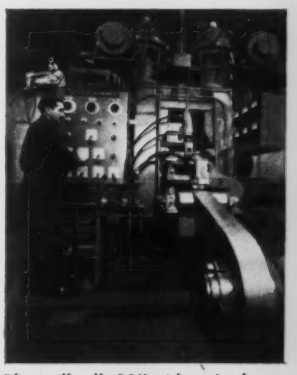
# When does it pay to "roll your own"?

The National Cash Register Company's Dayton, Ohio, plant had a problem. It couldn't always get enough special strip for the stamped parts of its business machines.

National Cash Register solved the problem by deciding to "roll its own"—and then asked Bliss to help work out the equipment it would need. The end result is a complete cold rolling department, designed and built by Bliss. It includes a 4-high 5¾" and 16" by 12" reversing mill, a 14" shear line, and a 12" slitting line.

Today, National Cash Register tailors standard steel strip to the exact thicknesses, widths and lengths it needs. Its new Bliss equipment turns material out fast and economically, and there are no more shortages to plague the plant's press department.

This installation shows how Bliss engineers can solve a customer's problem. To see how Bliss has handled others, write today for a copy of the 60-page Bliss Rolling Mill Brochure, Catalog 40-A. It's yours for the asking.



Bliss mill rolls 10"-wide strip down to .009" at speeds up to 400 fpm.

BLISS
SINCE 1857

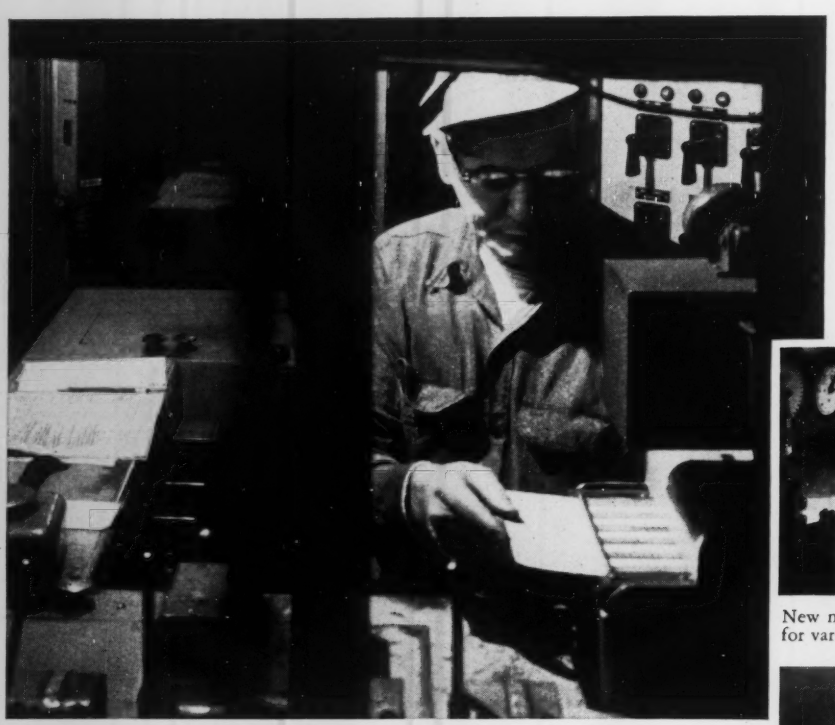
*100 years of making metal work for mankind*

**E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio**

**Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio**

# THE WORLD'S FIRST CARD-OPERATED MILL,

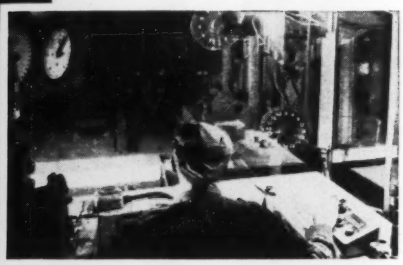
# PROMISES YOU BETTER STEEL—AUTOMATICALLY



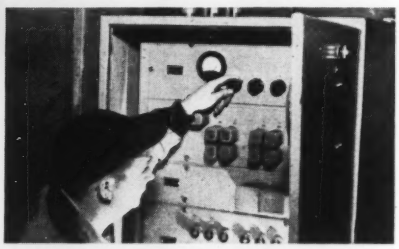
HIGHER QUALITY

MORE
UNIFORM SIZE

BETTER
PHYSICAL PROPERTIES



New method provides a large file of schedules for various types of steel.



General Electric engineers, working closely with AL personnel, developed and installed the control systems which regulate the mill.

Better quality, more uniform steel is the result.

A NEW punch-card control system, recently installed on the 56" universal roughing mill at Allegheny Ludlum's Brackenridge, Pa. plant, is advancing mill standards of quality control.

Here's how it works: Allegheny Ludlum rolling experts predetermine optimum rolling procedures for the type of steel desired and translate this data into punches on an IBM card. These punches represent the proper screwdown settings, mill speed and number of passes. When the mill schedule calls for it, the mill operator in the pulpit simply selects the proper card, inserts it into the card reader, and he is ready to roll. As the operator makes each pass, the mill is automatically adjusted for each additional pass required. The rolled material is held uniformly to desired dimensions, and day in, day out it proves to have better, more constant physical properties.

It's easy to see how this kind of progress fits into your interest in consistent high quality. By performing rolling operations exactly the same way time after time, this new unit further assures Allegheny Ludlum customers that they are getting the best possible product from the industry's pioneer producer.

Let us talk over your requirements with you. Write us, or call the Allegheny Ludlum sales office nearest you, and an AL sales engineer will help you with any problem. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.***

WSW 6628

**PIONEERING on the Horizons of Steel**

# Allegheny Ludlum

AL® ALLEGHENY LUDLUM

# "Best yet... for Heavy Duty HOLE PUNCHING up to ¼" steel"

"Our CJ Tooling is fast and clean for heavy duty work on sheets, and we're also getting big profit from punching holes in channels, angles etc. That's a tough proposition for the average shop . . . but not for us! With our WALES equipment we cut vees and corner notches at the same time. It really boosts our production."

WALES CJ Units punch unlimited straight line, staggered and scattered patterns . . . round or shaped holes. Die retention design features rapid die change WITHOUT REMOVING UNIT from set-up . . . provides controlled slug ejection. Time saving and money saving. Same units may be used over and over again in other patterns.

**SEND FOR BULLETIN NO. 25-G**

Shows actual job work and complete data of CJ sizes.

**WALES MOBILE FIELD UNITS**

Will demonstrate CJ and other tooling right at your door. Ask for details.

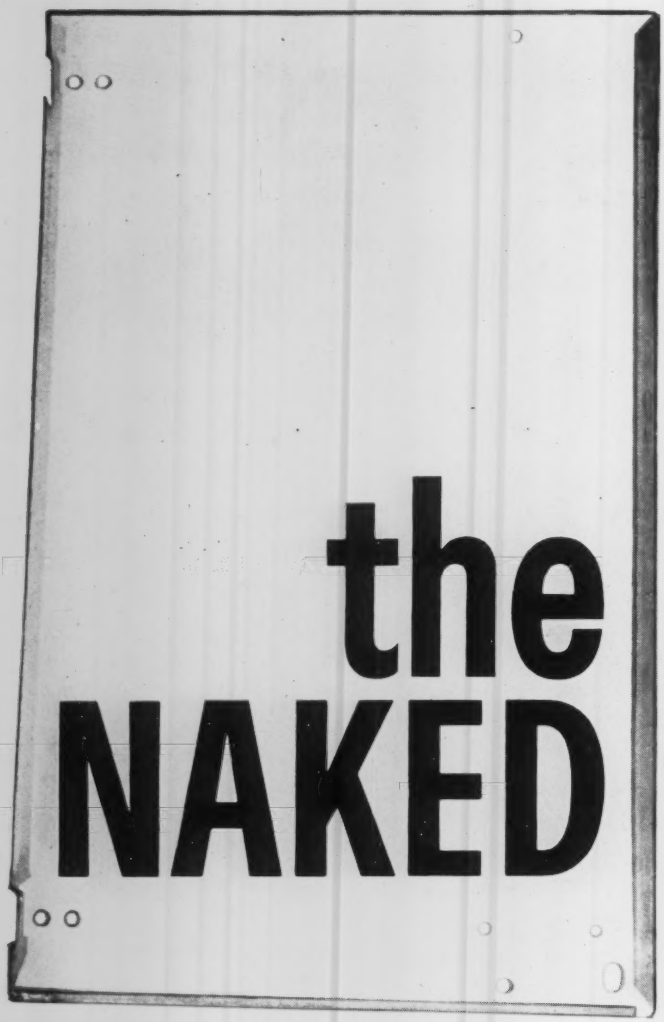
**WALES Strippit COMPANY**

A UNIT OF HOUDAILLE INDUSTRIES, INC

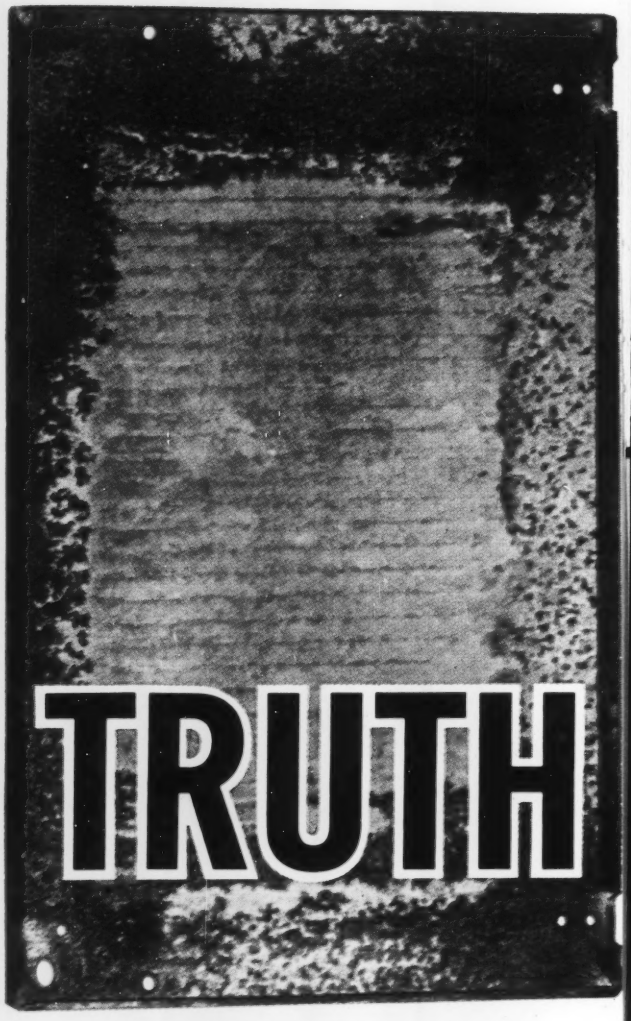
**AKRON, NEW YORK**

WALES-STRIPPIT OF CALIF., SOUTH GATE, CALIF.
WALES-STRIPPIT OF CANADA LTD., HAMILTON, ONT.

**"...the Wales-Way is the PLUS-PROFIT way"**



# the NAKED TRUTH



*Even after a year's exposure to storms, salt and humidity on a Florida pier a two-piece hollow kitchen cabinet door of Weirzin electrolytically zinc-coated steel remained gleaming bright on the inside, and held its finish beautifully on the outside. Note what happened to the inside of the plain steel door that went through the same test. That's rust and lots of it . . . a completely ruined product both inside and out.*

There's a profitable moral for *you* in that story—of a comparison test conducted by a leading manufacturer of kitchen cabinets for its own satisfaction. The moral: You can protect your products right from the start by using Weirzin right from the start. Its skin tight electrolytically fused zinc coating, uniformly applied, takes the toughest fabricating steps without peeling or flaking. Because it *does* stand up under the severest bending, drawing, crimping, flexing, you can forget coating or recoating—and its extra cost.

Furthermore, chemically treated Weirzin takes paint, enamel and lacquer beautifully, holds them indefinitely, eliminates underfilm corrosion.

***Send for free booklet*** . . . get all the facts on Weirzin's many cost-saving advantages. Write to Weirton Steel Company, Dept. D-9, Weirton, West Virginia.

WEIRTON STEEL COMPANY

**WEIRTON STEEL COMPANY**

WEIRTON, WEST VIRGINIA

A DIVISION OF

**NATIONAL STEEL CORPORATION**

# Who says we're not interested in the split dollar plan?

**"Of course we are!"**

**"Our husbands are happier in their jobs—and it's an excellent answer to our family problem of carrying enough life insurance in spite of high living costs."**

*Mr. Employer,* through Ætna Life's Split-Dollar Plan, *at virtually no cost to your business,* you can cement the loyalty of your key people to your company. And at surprisingly low cost to these employees, you provide the added protection that brings peace of mind and security to them and their families.

Send coupon today for complete information.

***ÆTNA has a place in the LIFE of your Business***

**OTHER ÆTNA LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .**

- **To protect PARTNERSHIPS against liquidation or reorganization.**
- **To protect SOLE PROPRIETORSHIPS for heirs or selected employees.**
- **To protect CLOSE CORPORATIONS from forced reorganization.**
- **To cover the loss of a KEY MAN in any organization.**

**ÆTNA LIFE**
**INSURANCE COMPANY**

*Affiliates:*
ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

Ætna Life Insurance Company
Hartford 15, Connecticut

Gentlemen:
Please furnish me, without obligation, further information on Ætna Life's Split-Dollar Plan.

Name_____
Company_____
Address_____

# This plant took to the air to get

**ANACONDA** 3/c 500 Mcm 5kv shielded Aerial Cable being pulled at large midwest plant. Cable was installed on steel towers leading from substation to plant facilities.

# new power fast —at low cost

## Installed Anaconda 5kv Aerial Cable

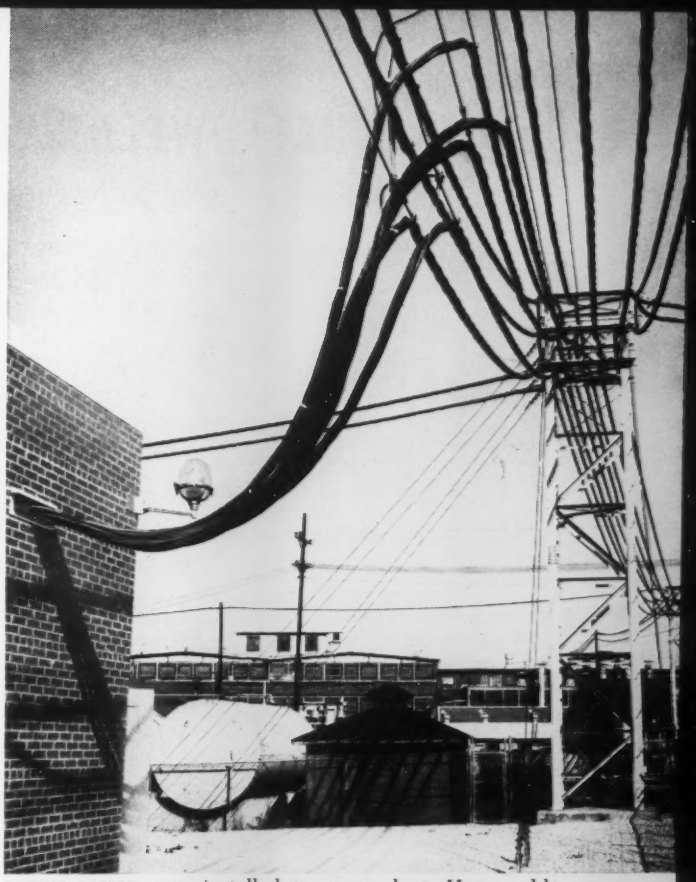
First, this major manufacturer looked at original costs. Then upkeep. And like so many others today, decided on Anaconda Aerial Cable for their new high-voltage distribution system.

Look how it paid off! Easy splicing, tapping and terminating simplified installation . . . reduced time and labor. There was no ditch to dig or fill. No underground pipes or structures to dodge. And no ducts, crossarms or insulators were needed. Their aerial cable is always handy for maintenance. And it's safe, neat.

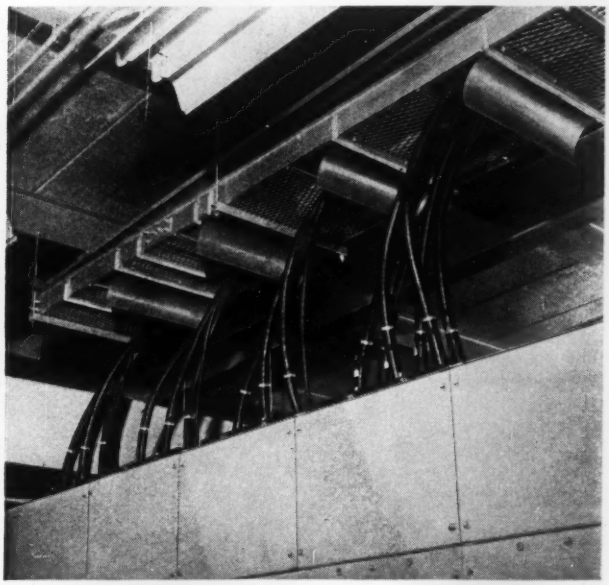
**Finest Aerial Cable.** Anaconda Aerial Cable is made with tough neoprene jacket that offers highest resistance to weather, corrosive atmosphere, sun. Special Anaconda Type AB butyl insulation gives extra protection against ozone, heat and moisture.

For the full story on aerial cable, call the Man from Anaconda or your nearest Anaconda distributor. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

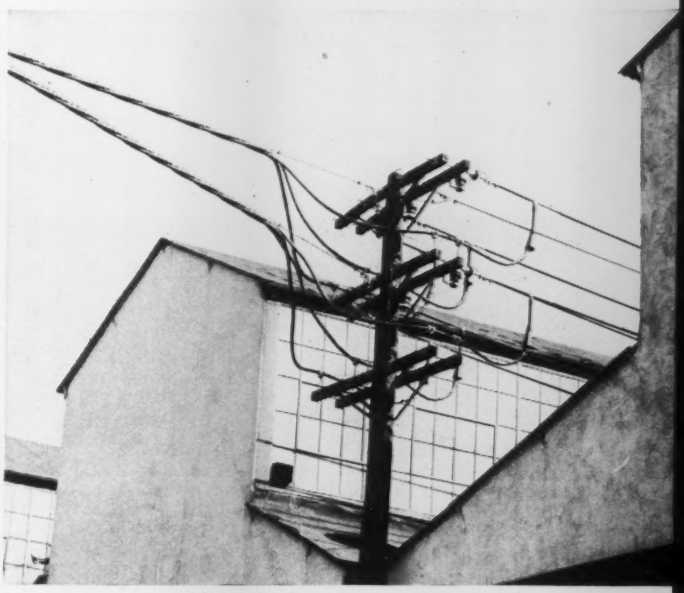
573301



**TWELVE CABLES** were installed to serve plant. Here, cable drops off messenger to substation entrance.



**INSIDE THE SUBSTATION,** cables are laid in overhead aluminum racks, then terminated in switch gear.



**TWO OF THE 12 CABLES** branch off to serve separate building. Aerial cable is terminated at pole structure.

**See the man from ANACONDA®**

**for AERIAL CABLE**

# Only New HALLOWELL *ERECTOMATIC*® Steel Shelving

## has a time-saving, positive built-in lock—plus these features:

**FAST ASSEMBLY.** Just position the shelf supports, insert the shelf, press the locks. Straight-in, straight-out shelf change. No tilting. No dismantling. No interference with any other shelf.

New Hallowell ERECTOMATIC® steel shelving goes up fast, can be rearranged in seconds. It's the unique built-in locking device* that cuts assembly time, speeds repositioning of shelves. Here's how easy it is! To position a shelf—slide it into place on the shelf supports, press the locks, and the job is done. To reposition a shelf—release the locks, pull the shelf straight out, slide it straight in on the supports at its new location, and press the locks. It takes only seconds to complete the move.

New Hallowell ERECTOMATIC steel shelving is available in all types, too. Open, closed, bin units, ledge units, counter units, and cabinets are made of prime steel, phosphate coated, and finished in baked-on enamel. Standard is SPS green, other colors are available.

Investigate new Hallowell ERECTOMATIC before ordering shelving. You'll find it stocked by leading industrial distributors and shop equipment dealers everywhere. Contact the one nearest you. Or write Hallowell Shop Equipment Division, STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.

*Patent applied for

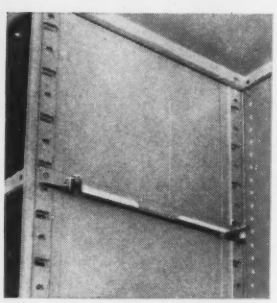
**INDEPENDENT SHELF POSITIONING.** Each shelf can be individually repositioned in seconds.

**FULL USE OF SHELF AREA.** No tees or angles, and beaded posts save valuable space.

**COMMON SIDE PANELS AND POSTS** save material between adjacent units in rack. Back and side panels are one-piece.

**BEADED POSTS AND FLANGED SHELVES** prevent snagging of clothing or stored goods, protect workers.

**QUICK SHELF CHANGE.** Release the locks, remove the shelf and its supports, relocate, and press the locks.



**FULL DEPTH SHELF SUPPORT.** No buckling possible. Reinforcements can be added when they are required.

**4 CLASSES OF SHELVES.** Regular, medium, heavy and extra-heavy construction meets all load requirements.

HALLOWELL® SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.

SPS

JENKINTOWN PENNSYLVANIA

# *Are You Getting What You Pay For?*

When you pay for HIGH QUALITY high-carbon wire, you want to be sure you get it. You do, when it is supplied by Roebling.

It is unsurpassed in quality, consistently true to specifications, and absolutely uniform in gauge. Hundreds of manufacturers attest to this fact . . . the qualities that they *pay* for—they *get* in Roebling high-carbon wire. The length of our relationship with customers proves it.

We'll be glad to show you what we mean. For information on superior high-carbon wire or cold rolled strip, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

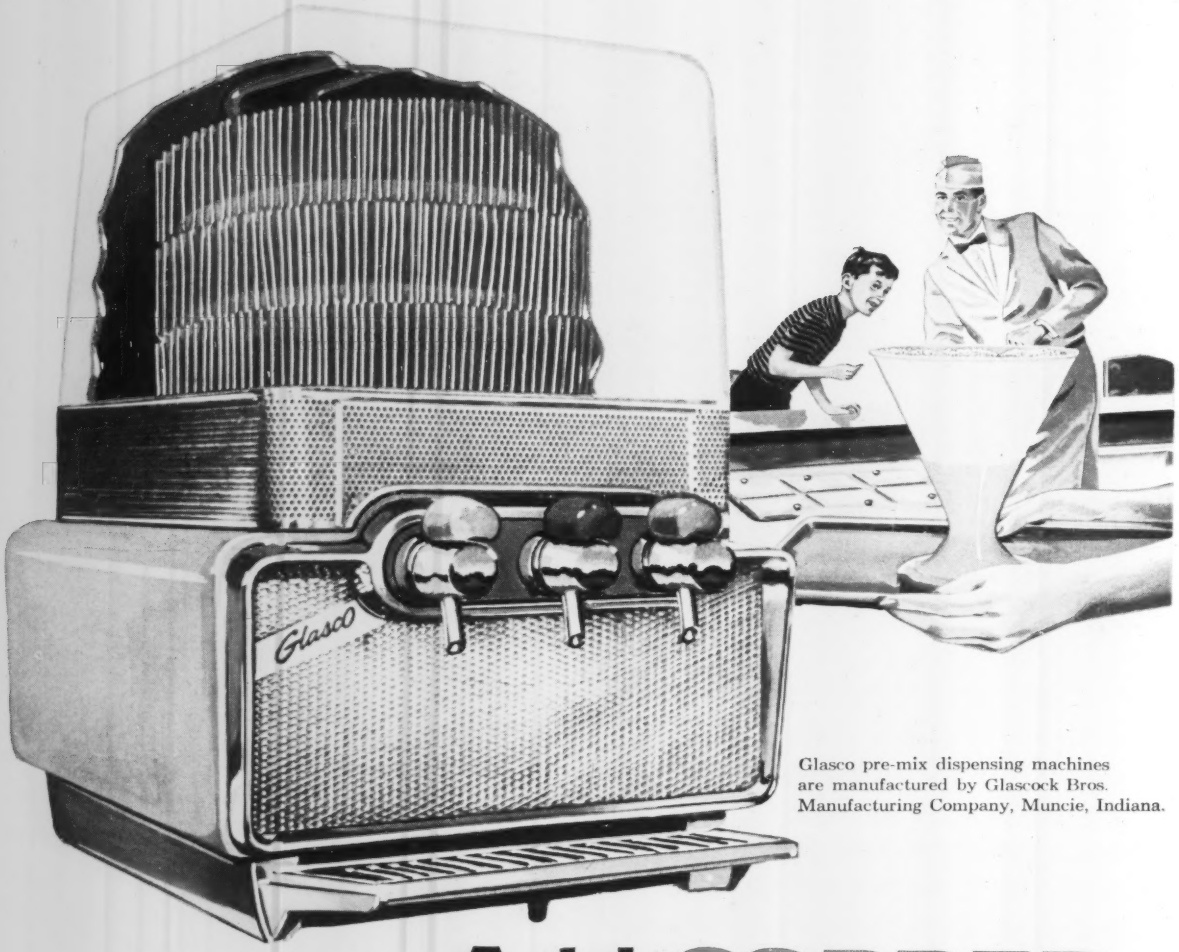


This lightweight "No Charge" spool is typical of Roebling's modern packaging methods that save customers time and money.

**ROEBLING**

*Branch Offices in Principal Cities—Subsidiary of The Colorado Fuel and Iron Corporation*

*Roebling... Your Product is Better for it*




Glasco pre-mix dispensing machines are manufactured by Glascock Bros. Manufacturing Company, Muncie, Indiana.

# Add COPPER

## ...and it serves your drink cold!

Your soft drink from a dispensing machine is served *ice cold* because of Copper. For Copper is the *best* heat-transfer material commercially available. *Copper dissipates heat faster.* That's why the coolant-carrying tubes . . . and fins . . . inside the dispenser are Copper.

And that's why Copper is the metal preferred for air-conditioners to keep you cool at home or at work.

Even the big, new liquid-cooled generators are kept cool with Copper.

Copper has other invaluable properties, too. Because it is the best practical conductor of electricity, wiring and motor-windings are made of Copper. Copper resists corrosion. (It simply won't rust!)

In manufacturing processes, Copper has always been a great metal to *work* with. It proves easy to machine, form, draw, stamp, polish, plate. It welds readily . . . is excellent for soldering and brazing. Besides, you recover a higher portion of your materials cost from the higher-cash-value of your manufacturing scrap!

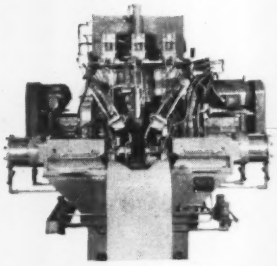
And today, you can plan with Copper . . . confident that the Copper Industry will keep Copper in ample supply to meet your future needs.

## COPPER • BRASS • BRONZE

**in over 40 Standard Alloys!**

For information on cooling or any other application of Copper, write to the Copper & Brass Research Association, 420 Lexington Ave., New York 17, N. Y.

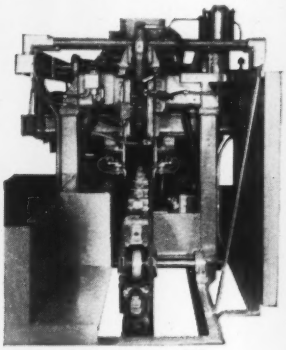
*Entry end of line*



# Federal

## PACKAGED PRODUCTION LINE

### *Automates Pedal Bracket Manufacture for Dodge!*



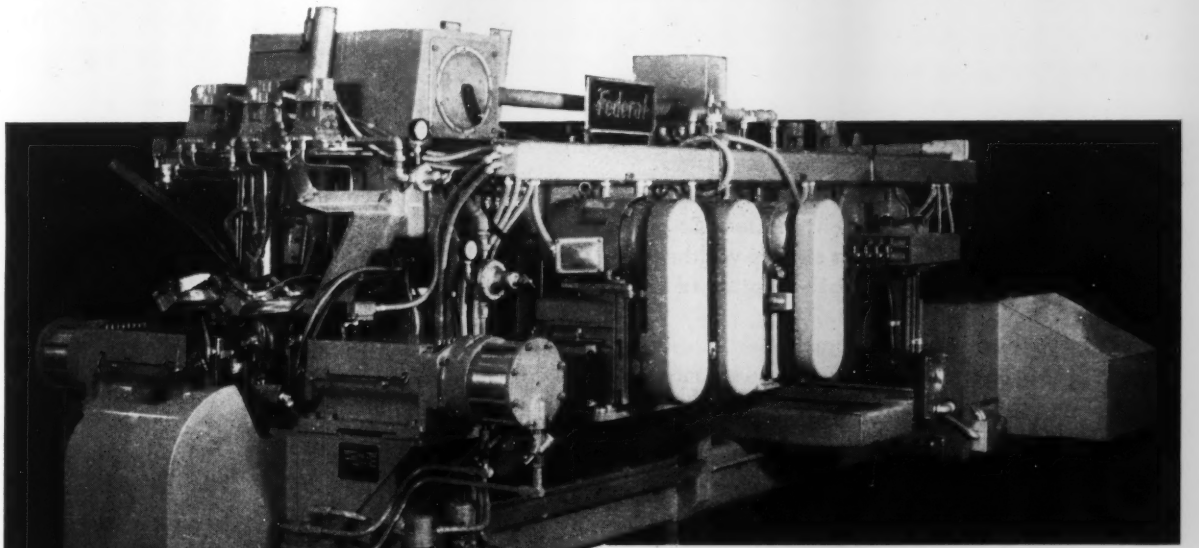
*Exit end of line*

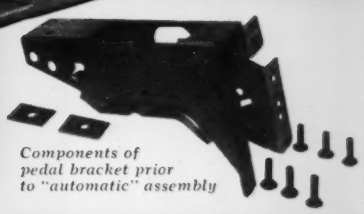
**SINGLE LINE AUTOMATICALLY FEEDS, SPOT FACES, REAMS, DE-BURRS, WELDS TO SPEED PRODUCTION, CONTROL UNIFORMITY OF PEDAL PART**

The Dodge Division of the Chrysler Corporation recently set into operation a single Federal machine that performs manufacturing functions normally requiring many separate pieces of equipment. In the fabrication of automotive pedal brackets this Federal "Packaged Production Line" was made to feed and weld two pads to the bracket, spot face one pad, ream and de-burr holes in each pad, feed and weld six mounting bolts and eject the finished piece at a rate of 775 units per hour.

The combining of several manufacturing operations into one has many natural advantages. It means one source responsibility, reduced floor space, and handling requirements, equipment economies and greater product uniformity.

Don't overlook these benefits—talk with Federal—a pioneer in the development and manufacture of "Packaged Production Lines."



*Components of pedal bracket prior to "automatic" assembly*

*Finished pedal bracket*

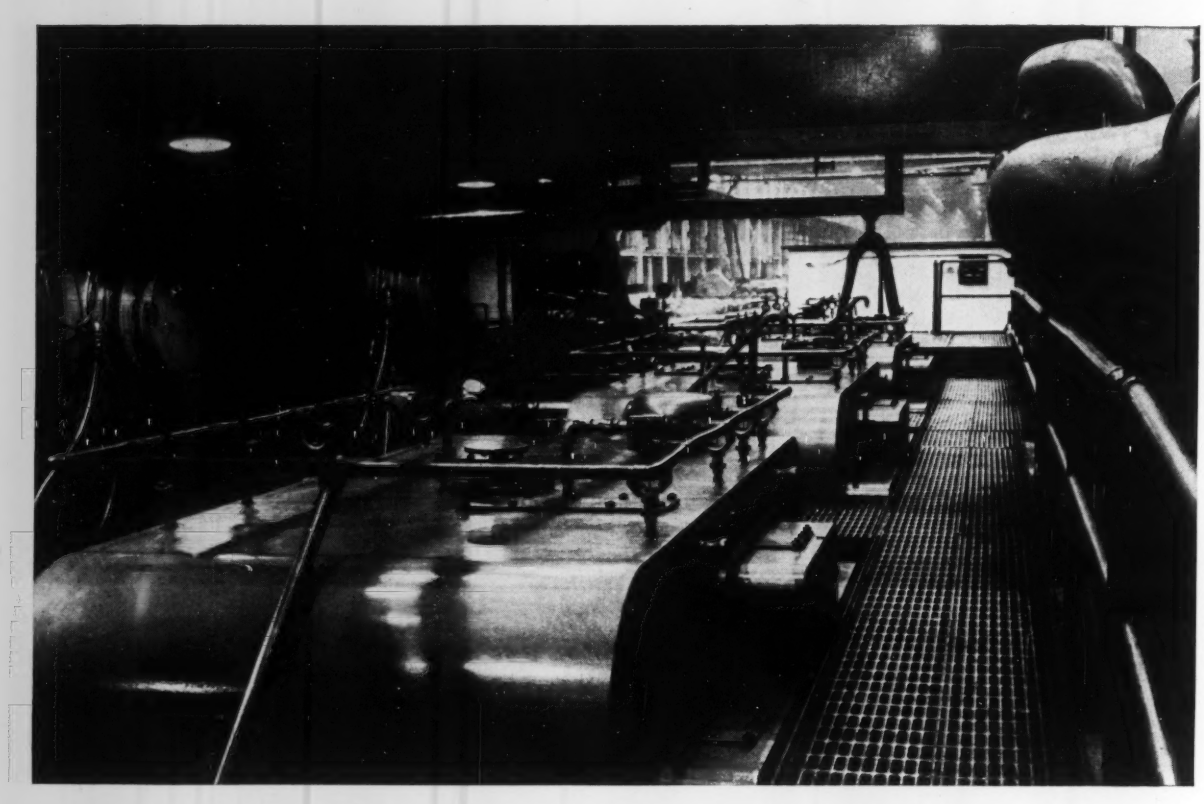
Federal® WELDERS

Warco® PRESSES

**The Federal Machine and Welder Company**

225

**WARREN, OHIO**



# *Steel strip whizzes through this new mill at 80 miles per hour...*

**It's a high-speed, cold reduction five stand tandem mill at Weirton Steel Co., Division of National Steel Corp. It rolls strip in widths to 48" by .008" thick. Gear drives are fully protected with *Texaco Meropa Lubricants*.**

New steel mill equipment operates faster, carries heavier loads. That's why the long-lasting extreme pressure properties of *Texaco Meropa Lubricants* are so important in protecting gears and bearings from wear and damage. They cushion metal surfaces against shock or prolonged heavy loads.

*Texaco Meropa Lubricants* also contain exclusive polar additives that keep them where they're needed, even under conditions of severe heat, pressure or moisture. Moreover they resist thickening, do not foam, won't separate, and are non-corrosive to gear and bearing metals. All good reasons why *Texaco Meropa Lubricants* help gear your mill to higher efficiency.

Let a Texaco Lubrication Engineer give you further details. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO REG. T.M.

**TEXACO Meropa Lubricants**

**FOR STEEL MILL GEAR DRIVES**

# Metalworking Outlook

## Shift to Missiles Helps IT&T

International Telephone & Telegraph Co.'s four main defense divisions see continued high sales in 1958 as a result of the Air Force shift from manned aircraft to missiles . . . Slowdowns in manned aircraft procurement continue. Latest victims: McDonnell Aircraft Corp.'s F101; Lockheed Aircraft Corp.'s F104; Convair's F106; and Republic Aviation Corp.'s F105 . . . A missile maker is also feeling the pinch. North American Aviation Inc. reports it had $126 million in unfilled orders for the Navaho guided missile on June 30. Much of the work has been canceled, but J. H. Kindelberger, chairman, North American, says the current fiscal year will be the best in the firm's history. The outlook for '58 is "less favorable."

## Blough Sees Improvement

U.S. Steel Corp.'s chairman, Roger M. Blough, predicts that the steel industry in the second half will operate at 80 to 85 per cent of ingot capacity, and that production for the year will approximate 115 million tons. He believes that consumer inventories reached their peak late in the second quarter, but ascribes little of it to buying in anticipation of higher prices in July. Those stocks, he thinks, will be reduced in the current half, with consumption exceeding output. Orders will tend upward, with an anticipated boost from autos late in the third quarter.

## Birth of a New Industry?

Radioisotope prices may drop drastically. The Atomic Energy Commission is building a pilot plant at Oak Ridge, Tenn., to mass produce "hot" atoms from atomic reactor waste. Says the AEC: "The economic feasibility of private enterprise participation in radioisotope production appears imminent."

## Communities by the Package?

Hotpoint Co. teamed up with a Texas construction firm, a railroad and a public utility to form practically a complete community in Illinois. Hotpoint purchased 770 acres and plans to start construction on its first plant this fall. The Texas firm has a 6000-home development under way —all homes to be fully equipped with Hotpoint appliances—and has set aside another 720 acres for industrial development. The Chicago & Northwestern Railroad has spurs to the area and will construct a marshaling yard for industry. Commonwealth Edison Co. is taking care of the power needs. The entire project involves about 3000 acres, principally farm land, about 20 miles northwest of Chicago.

## More Pattern Bargaining

Examples: Mechanics Educational Society of America (MESA) won't let any of its locals sign contracts for more than one year. United Steel-

Technical Outlook—p. 87 Market Outlook—p. 135

workers held a national meeting early this summer and plans regional conclaves to sell the basic steel pattern to its 1500 locals that have contracts with companies other than basic steel. United Auto Workers and International Association of Machinists have met to draft pattern demands to be made to the aircraft industry where both unions represent employees. More developments of this sort will come as the AFL-CIO gains strength and locals lose more and more autonomy.

## NLRB Has Busy Quarter

During the second quarter, 3750 cases were filed with the National Labor Relations Board, the largest number since the third quarter of 1953. AFL-CIO unions participated in 1272 collective bargaining elections, won 751 of them. Independent unions participated in 162, won 110 of them.

## IUE Restive at GE

The International Union of Electricalworkers is making noises that indicate it may try to open its contract with General Electric Co. in 1958 even though it's supposed to run until 1960. The contract does contain a reopener clause for a discussion of employment security next year, which the IUE may try to use as a foot in the door to bargain on wages. The Westinghouse Electric Corp. contract has a similar provision.

## UAW and Retirement

Part of UAW members' dues are going into a fund for a long range program for older and retired members. About $28,000 a month is being contributed to a program that aims at providing educational and preretirement counseling plans for workers approaching retirement and at providing "drop in" centers for retired members. Three such centers already operate in Detroit.

## New Look at Manpower

Plagued by inadequate—and sometimes conflicting—figures on the nation's technological manpower needs, the President's Committee on Scientists & Engineers will sponsor a "hard look" at available statistics. To do the job will be researchers headed by Phillip M. Hauser, University of Chicago.

## Straws in the Wind

Preliminary figures in a nationwide test indicate the average year-round cost for heating and cooling a residence is $10.64 a month . . . Bid prices for federal aid highway construction in the second quarter were 0.1 per cent higher than they were in the first . . . Major atomic energy contracts performed by Blaw-Knox Co. through its Chemical Plants Division have totaled about $450 million since 1947 . . . H. K. Porter Company Inc. forms its eleventh division with acquisition of Cleveland Hardware & Forging Co. . . . Beryllium Corp. last week unveiled a $4.5 million plant at Hazleton, Pa., which will supply 500,000 lb of pure beryllium to the Atomic Energy Commission over a five-year period (Brush Beryllium Co., Cleveland, will supply another 500,000 lb).

FRANKIE SURE SPENDS A LOT OF TIME STREAMLININ' THAT SHOVEL.
HE'D TAKE IT HOME AT NIGHT, IF THE COMPANY D LET 'IM.
WITH ALL THAT WORK HE STILL CAN'T THROW THE DOLOMITE OVER THE FRONT BANK--!
THANKS TO FREDERICK C. STEINMETZ AMERICAN STEEL & WIRE WORCESTER, MASS.
KUEKES

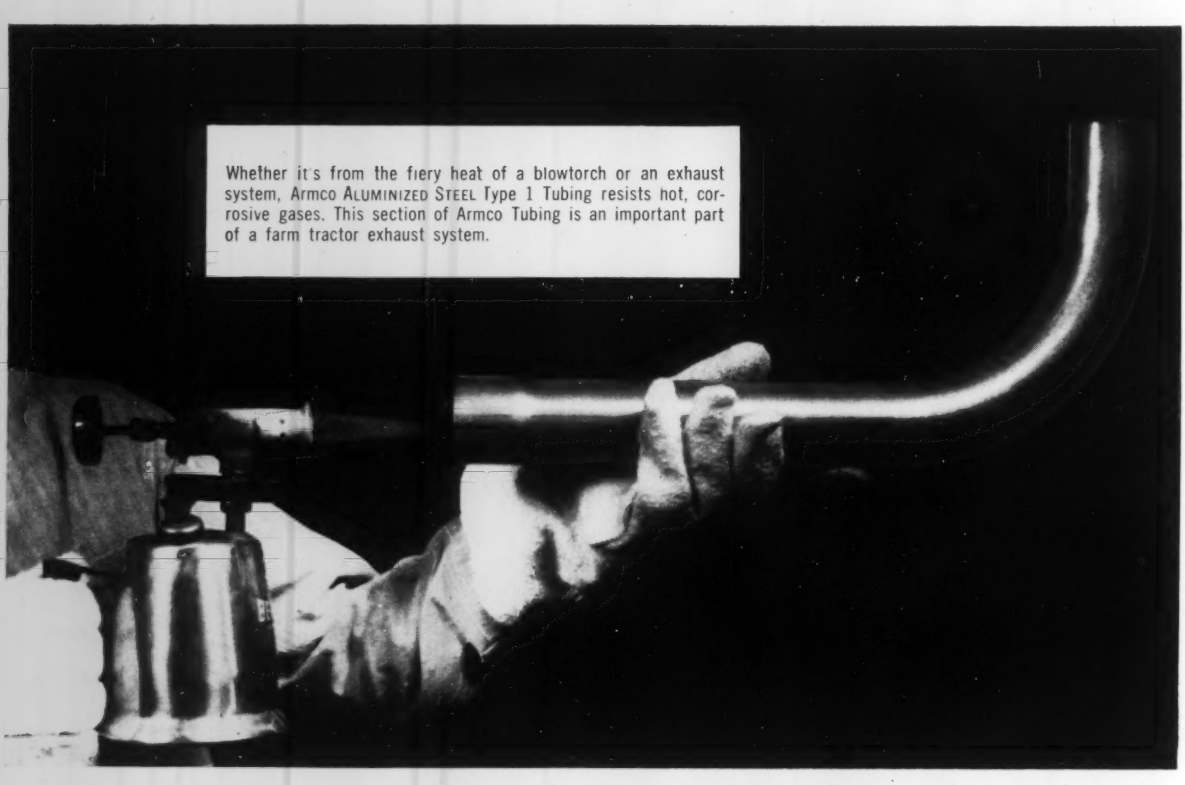
# The Shovel Expert

WHY NOT DESCRIBE YOUR OPEN-HEARTH CARTOON IDEA AND SEND IT ALONG TO US?

The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

**BASIC REFRACTORIES INCORPORATED** 845 HANNA BUILDING • CLEVELAND 15, OHIO

# when tubular parts MUST resist combined heat, corrosion ...Specify Hot-Dip Aluminum-Coated Armco Steel Tubing



Whether it's from the fiery heat of a blowtorch or an exhaust system, Armco ALUMINIZED STEEL Type 1 Tubing resists hot, corrosive gases. This section of Armco Tubing is an important part of a farm tractor exhaust system.

Try economical Armco ALUMINIZED STEEL® Type 1 Tubing for your fiery jobs. Inside and out it's protected against heat and corrosion by a durable coating of hot-dip aluminum.

**In fact, ALUMINIZED STEEL Type 1 Tubing offers resistance to combinations of heat and corrosion that is unmatched by any other metal tubing in its price class.**

## STRONG BUT LIGHTWEIGHT

Although this tubing has the strength of steel, it is relatively light. For example, 18 gage, 1-inch O.D. ALUMINIZED STEEL Tubing weighs only about ½-pound per lineal foot. It is available in O.D.'s from ¼-inch to 3 inches, depending on gage; gages from 13 to 20, depending on O.D. The aluminum coating is replaced on the outside seam after the tubing is welded.

For outdoor applications, Armco produces another aluminum-coated grade—Armco ALUMINIZED STEEL Type 2 Tubing. It provides excellent atmospheric corrosion resistance. Still another special grade, Armco ZINCGRIP® Steel Tubing, has a tightly-adhering hot-dip coating of zinc that will not flake or peel during the severest fabrication.

Fill in and mail the coupon for full information about any of these rust-resisting Armco Steel Tubing grades.

**ARMCO STEEL CORPORATION**
1877 Curtis Street, Middletown, Ohio
Send me more data about these special Armco Tubing grades:

☐ ALUMINIZED STEEL Type 1 ☐ ZINCGRIP Steel
☐ ALUMINIZED STEEL Type 2

Name_____ Title_____
Firm_____
Street_____
City_____ Zone____ State_____

# ARMCO STEEL CORPORATION

1877 Curtis Street, Middletown, Ohio

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

ARMCO®

# Needed: Better Marketing

The future success of your business will depend on the kind of a marketing job you do in the next few years. The signposts all point in that direction.

The business population (contractors, manufacturers, wholesalers, retailers and service firms) has been increasing at a rate of 50,000 a year. The total stood at 4.3 million at the beginning of the year.

Yet in an expanding market for goods, the number of firms in manufacturing has been declining. Since 1952, failures have exceeded new incorporations by 20,000. On Jan. 1, there were 307,000 manufacturers in business—and some have fallen by the wayside in the last seven months.

A study of each casualty undoubtedly would reveal weaknesses in one or more of the five main functions of a business: Product design, manufacturing methods, financing, personnel management and marketing.

In many cases, marketing would be at the top of the list.

Since the war, the emphasis in industry has centered on production and its attendant problems. Practically anything from raw materials to finished products found eager takers. Slipshod, lackadaisical selling got by.

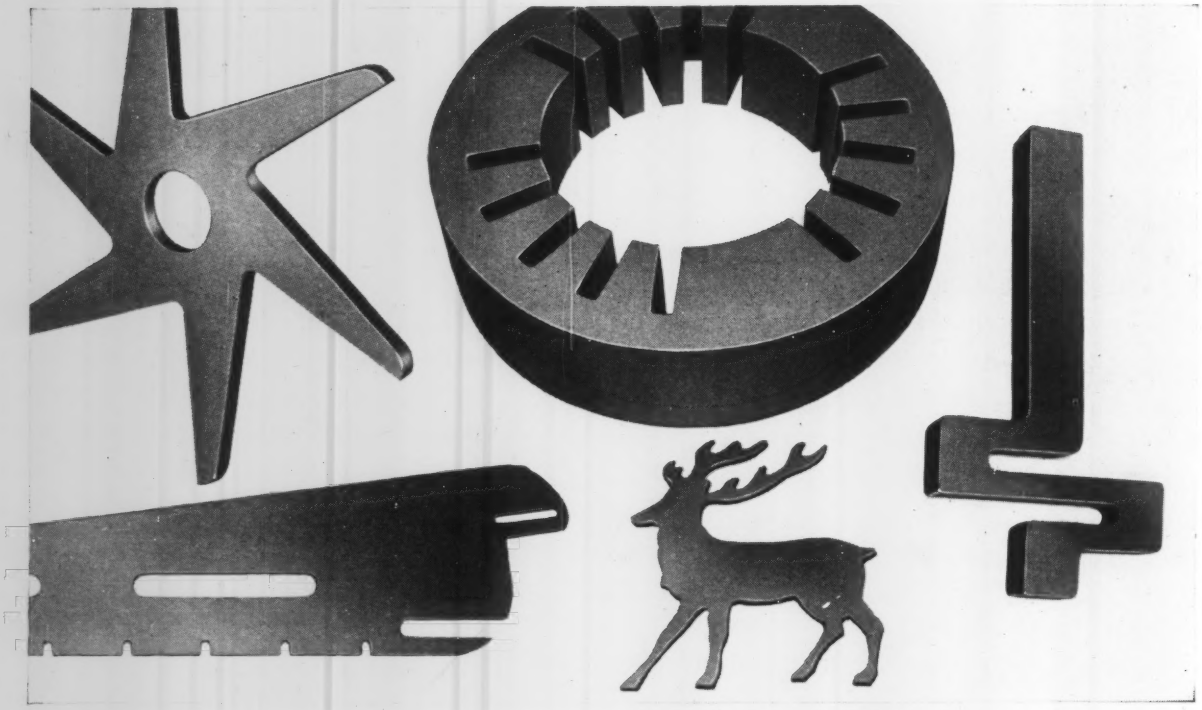
In the last few months, there has been a noticeable switch in emphasis from the science of production to the science of marketing.

We call it a science since selling no longer is simply a matter of hiring a salesman and sending him out to pick up an order. It involves product planning, market research, advertising and sales promotion, sales training and effective channels of distribution. In brief, it means the orientation of your business to your customer.

Such a program may call for the eventual expansion of your marketing staff, which may present a problem because a shortage of marketing personnel is taking shape (see page 66). But we think the first question is: Are you making full use of what you have?

Take the advertising manager, for example. He is a key "contact" man for all your present and potential customers. But in too many companies he is underrated, underpaid and understaffed. We think that if you make a realistic analysis of his function, you will upgrade his position on the marketing ladder and do your company a lot of good in the process.

Irwin H. Such
EDITOR-IN-CHIEF



# What's the lowest cost way to produce steel parts like these?

You may be paying considerably more than you need to for parts like these if you aren't taking advantage of Ryerson flame-cutting service.

Size makes no difference—nor intricacy of shape. You can order one part or one thousand and get quick delivery of steel cut to close tolerance—with almost die-cut accuracy from piece to piece. And here's where the saving comes in:

1. **No dies or molds** are needed so you save this cost when you switch from cast or forged parts to flame-cut parts.
2. **Less machining** is usually required to finish a flame-cut part. Sometimes machining is eliminated altogether.
3. **Freight costs lower**—If you're now paying freight on steel you later scrap you may well be able to pay for flame cutting with the money you save by shipping lighter flame-cut parts. The blank for a 6″ disc is 49% heavier than the disc itself. Storage and handling expenses are reduced, too.
4. **Less time in process**—You can often convert finished products into cash more quickly because parts can be produced faster by flame cutting.
5. **No loss on spoilage or rejects**—They're our problem—not yours.
6. **Design changes are simpler** and can be made more frequently without sacrificing manufacturing economy.

You draw on the nation's largest steel stocks at Ryerson—and unequalled flame-cutting facilities are ready to work for you. A blue print or sketch with clearly marked dimensions is all we need for prompt handling of your requirements. Call your nearby Ryerson plant for cost-cutting flame-cut steel today.

*In stock: Carbon, alloy and stainless steel—bars, structurals, plates, sheets and strip, tubing, re-bars—industrial plastics, machinery & tools, etc.*

RYERSON CERTIFIED QUALITY

## RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI
CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

# Profit Trend Up Slightly

| Selected Metalworking Firms | First Half Net Earnings 1957 | 1956 | PER CENT CHANGE* Behind | Ahead |
|---|---|---|---|---|
| American Air Filter Co. Inc. | 1,140,265 | 740,560 | | → 54 |
| American Metal Products Co. | 2,921,612 | 2,195,736 | | → 38 |
| American Steel Foundries | 6,133,273 | 6,709,522 | 8 ← | |
| Aro Equipment Corp. | 655,750 | 502,329 | | → 30 |
| Beryllium Corp. | 703,647 | 569,328 | | → 23 |
| Bridgeport Brass Co. | 2,854,654 | 2,528,008 | | → 13 |
| Caterpillar Tractor Co. | 27,389,486 | 27,380,627 | | → 00.03 |
| Chrysler Corp. | 89,740,757 | 18,671,471 | | → 394 |
| Continental Can Co. Inc. | 19,575,000 | 20,561,000 | 5 ← | |
| Diamond T Motor Car Co. | 391,206 | 1,028,818 | 62 ← | |
| Douglas Aircraft Co. Inc. | [a] 17,994,289 | 12,820,637 | | → 40 |
| Eaton Mfg. Co. | 6,586,156 | 7,459,750 | 12 ← | |
| Elliott Co. | 1,021,792 | 891,145 | | → 14 |
| Fairbanks, Morse & Co. | 1,443,991 | 1,310,557 | | → 10 |
| Federal-Mogul-Bower Bearings Inc. | 5,145,000 | 4,814,000 | | → 7 |
| Ferro Corp. | 877,659 | 1,300,936 | 32 ← | |
| Foote-Burt Co. | 438,965 | 107,053 | | → 310 |
| Ford Motor Co. | 171,000,000 | 131,070,000 | | → 30 |
| General Electric Co. | 127,823,000 | 112,864,000 | | → 13 |
| General Motors Corp. | 481,236,708 | 503,471,823 | 4 ← | |
| General Steel Castings Corp. | 1,577,707 | 1,513,132 | | → 4 |
| Hoskins Mfg. Co. | 744,500 | 791,170 | 8 ← | |
| IBM Corp. | 40,061,507 | 31,868,620 | | → 25 |
| Jorgensen (Earle M.) Co. | 1,501,636 | 1,374,962 | | → 9 |
| Koehring Co. | 1,541,996 | 1,279,960 | | → 20 |
| Mack Trucks Inc. | 6,508,316 | 5,754,031 | | → 13 |
| Minneapolis-Honeywell Regulator Co. | 10,304,470 | 9,560,314 | | → 8 |
| Monarch Machine Tool Co. | 678,485 | 483,953 | | → 40 |
| New York Air Brake Co. | 1,326,572 | 1,162,958 | | → 14 |
| Pittsburgh Screw & Bolt Corp. | 1,143,737 | 1,046,120 | | → 10 |
| Porter (H. K.) Company Inc. | 3,460,268 | 3,991,746 | 13 ← | |
| Radio Corp. of America | 20,311,000 | 20,037,000 | | → 2 |
| Rockwell Spring & Axle Co. | 8,585,165 | 7,091,580 | | → 7 |
| Scullin Steel Co. | 575,400 | 240,318 | | → 140 |
| Stanley Works | 2,071,383 | 2,455,796 | 16 ← | |
| Thompson Products Inc. | 8,323,211 | 4,861,842 | | → 71 |
| Transue & Williams Steel Forging Corp. | 353,357 | 320,153 | | → 10 |
| Union Carbide Corp. | 69,601,905 | 72,789,578 | 4 ← | |
| United States Pipe & Foundry Co. | 4,782,504 | 5,368,370 | 11 ← | |
| Vertol Aircraft Corp. | 1,322,079 | 1,755,868 | 24 ← | |
| Wayne Pump Co. | 307,299 | 658,684 | 53 ← | |
| Westinghouse Air Brake Co. | 6,640,686 | 6,135,849 | | → 8 |

(a) before special charge of $1,320,066.
* Approximate.

WITH SOME notable exceptions, metalworking had a better first half in 1957 than it did in 1956. The outlook for the second half is good, but appliances, construction and automobiles will need an upswing if the industry is to overtake its 1956 profits.

Steelmakers could have a near-record year, despite a spotty first half and a softening in the market the past month. A. B. Homer, president, Bethlehem Steel Corp. states: "It looks as if the low point has been reached." Bethlehem expects to be operating at about 88 or 89 per cent of capacity through August, and September will be a little better. In the fourth quarter, it looks for a rate of about 90 per cent. Present rate: 85 per cent.

## Metalworking

Although most blue chip companies reported a better first half this year than last, about 30 per cent of all companies surveyed by STEEL had lower net earnings. While five out of six firms look forward to a better second half, few think it will be substantially better. Manufacturers are divided on whether total net income will exceed 1956's. Most think it will.

But for the universal problem, the profit squeeze, first half earnings would have been much better than they were.

**Cases in Point**—Says Raymond F. Evans, chairman, Diamond Alkali Co., Cleveland: "Earnings were affected by three major factors: Erosion of profit margins due to increased costs of labor, materials and transportation; accelerated research and development programs; and start-up costs of expansion programs."

Continental Can Co.'s sales rose 3 per cent, while profits dropped 5 per cent. Smaller companies were even harder hit. Van Norman Industries Inc., Springfield, Mass., had a sales increase of over 55 per cent, while its profits rose only about 9 per cent. Another indication of the situation: General Motors Corp.'s employment was down 18,650, but its labor costs rose $14 million.

**Outlook**—By product classification, the second half shapes up like this:

**Aircraft** — Thompson Products Inc., Cleveland, notes that aircraft sales reached an "all-time peak" early in the year before leveling off during the second quarter, reflecting the changing military program. The odds are better than 2 to 1 that this year will exceed 1956. Two partmakers report first half peacetime records.

**Automotive** — Despite a record first half for Chrysler and substantial gains by Ford Motor Co. and Mack Trucks Inc., the period did not live up to predictions. But

sales of 1958 models this year are expected to keep earnings significantly ahead of 1956's.

**Nonferrous**—Most companies report lower sales and net earnings in the first half as a result of reduced demand and weakening prices.

Zinc, lead and copper people look for lower dollar sales volumes and earnings in the second half. Sales of aluminum may rise in the third quarter, but earnings are likely to stay static.

**Appliances**—Sales in 1957's first half about equaled those in the same 1956 span, but net earnings fell. Borg-Warner Corp. reports a decrease in earnings due to the effects of a price war. General Electric Co. notes that "the usual spring upsurge in purchases did not take place." Other contributing factors: Reduction in housing starts, cool weather, which held down air conditioning sales, and softening of prices.

Most manufacturers expect a slight upturn in the second half. Aerovox Corp. predicts a rise in TV and radio sales. Radio Corp. of America expects the already strong sales of phonographs to become stronger. Raytheon Mfg. Co. is relying on a government backlog to increase its second half sales.

**Machinery** — Sales were up slightly, and net income about equaled last year's. Heavy equipment and electrical apparatus continued strong; industrial equipment was steady; farm equipment sales were about the same as last year's; construction machinery was down.

Manufacturers look to a better second half. A few feel that this year's net income will exceed last year's.

**Office Equipment**—Business machine manufacturers look forward to another record year. International Business Machines Corp. reported earnings which were about 25 per cent above those in the comparable period last year. National Cash Register Co. had first half net sales of about $183 million, versus about $155.5 million in the same 1956 period.

**Electronics** — Sylvania Electric Products Inc. reports a "sharp increase" in sales of receiving and picture tubes to other set manufacturers; production is at an annual rate "above that of a year ago." RCA's tube division also is doing better than it did last year.

Consolidated Electrodynamics Corp., Pasadena, Calif., set all-time records in earnings, sales and new orders during the first six months of 1957.

| Selected Steel Companies | First Half Net Earnings 1957 | 1956 | PER CENT CHANGE Behind | Ahead |
|---|---|---|---|---|
| Alan Wood Steel Co. | 936,000 | 1,287,000 | 26 ← | |
| Allegheny Ludlum Steel Corp. | 7,742,092 | 9,090,579 | 14 ← | |
| Armco Steel Corp. | 30,510,292 | 37,097,427 | 18 ← | |
| Barium Steel Corp. | 3,340,000 | 2,914,000 | | → 14 |
| Bethlehem Steel Corp. | 103,701,162 | 95,262,014 | | → 8 |
| Colorado Fuel & Iron Corp. | 8,904,714 | 8,709,970 | | → 2 |
| Continental Steel Corp. | 1,686,310 | 1,590,404 | | → 7 |
| Crucible Steel Co. of America | 6,045,996 | 8,086,794 | 25 ← | |
| Detroit Steel Corp. | 1,863,964 | 4,142,551 | 54 ← | |
| Granite City Steel Co. | 6,261,956 | 7,672,822 | 19 ← | |
| Inland Steel Co. | 29,764,456 | 28,960,481 | | → 3 |
| Jones & Laughlin Steel Corp. | 26,593,000 | 30,909,000 | 13 ← | |
| Kaiser Steel Corp. | 14,908,487 | 11,736,188 | | → 27 |
| Laclede Steel Co. | 1,865,514 | 2,161,531 | 13 ← | |
| Lone Star Steel Co. | 6,664,060 | 4,798,689 | | → 39 |
| National Steel Corp. | 26,108,847 | 28,961,410 | 11 ← | |
| Pittsburgh Steel Co. | 3,621,323 | 4,781,107 | 24 ← | |
| Republic Steel Corp. | 52,917,897 | 51,532,452 | | → 3 |
| U. S. Steel Corp. | 231,421,308 | 208,550,441 | | → 11 |
| Washington Steel Corp. | †1,464,847 | 1,245,168 | | → 18 |
| Youngstown Sheet & Tube Co. | 21,924,309 | 21,522,772 | | → 2 |

† 9 months.

## Steelmakers

First half (especially second quarter) earnings were hurt by unusually high scrap costs and widespread liquidation of inventories by steel users. But E. J. Hanley, president, Allegheny Ludlum Steel Corp., says: "We are beginning to see improvement in both areas."

C. M. White, chairman, Republic Steel Corp., blames the slower second quarter partially on the fact that some large customers were not producing up to expectations.

**Earnings Going Up** — J. L. Mauthe, chairman, Youngstown Sheet & Tube Co., thinks that the fourth quarter will show "a marked improvement in steel demand." Other producers agree. Lone Star Steel Co. expects second half sales volume to exceed its record first half by at least 5 per cent.

**Earnings Good** — U.S. Steel Corp.'s net income for the first six months was a new high for any comparable period. First half sales (over $2.3 billion) also hit a new peak.

Kaiser Steel Corp. reported an increase in first half net profit of 27 per cent over the like 1956 period. Jones & Laughlin Steel Corp. reported the highest second quarter net income in its history. But its earnings for the half were down 13 per cent from 1956's first half.

**Fourth Quarter Bright** — Most producers expect 1957's fourth quarter to be an extremely prosperous one. "Business from the automotive industry should increase considerably," comments Henry A. Roemer, president, Sharon Steel Corp.

"Our major accounts are raising their sights on fourth quarter requirements," states M. J. Zivian, president, Detroit Steel Corp. Alan Wood Steel Co. expects to operate at or near capacity during 1957's last three months.

Joel Hunter, president, Crucible Steel Co. of America, adds: "While orders for several important product lines have been declining recently, we expect a reversal of this trend late in the third quarter. Earnings in 1957 should be spread more evenly than they were in strike-affected 1956."

# Defense Plan Hit

**A new study requested by the Defense department points up our lack of planning**

TOO MANY PLANS and lack of co-ordination among the various agencies of government—those are the points made by the National Security Industrial Association in a study of defense mobilization planning. The study was requested a year ago by the Defense department, so it may be considered a semiofficial document. Consensus: Look for some changes in our war planning.

**Short War?** — The association disposes of the short war-long war controversy with this cogent phrasing: "Any planning which contemplates a build-up of weapons production after a nuclear attack is not sound." Conclusion: "There remains peripheral, economy draining warfare (with either conventional or nuclear weapons) . . . this is the only type of warfare against which production allocation planning can be effective."

**Who Knows?**—The association's main effort is to get Defense to tell industry more about its needs. It recommends that the department conduct a series of expensive studies (with the aid of the latest calculating devices) on industry's composition.

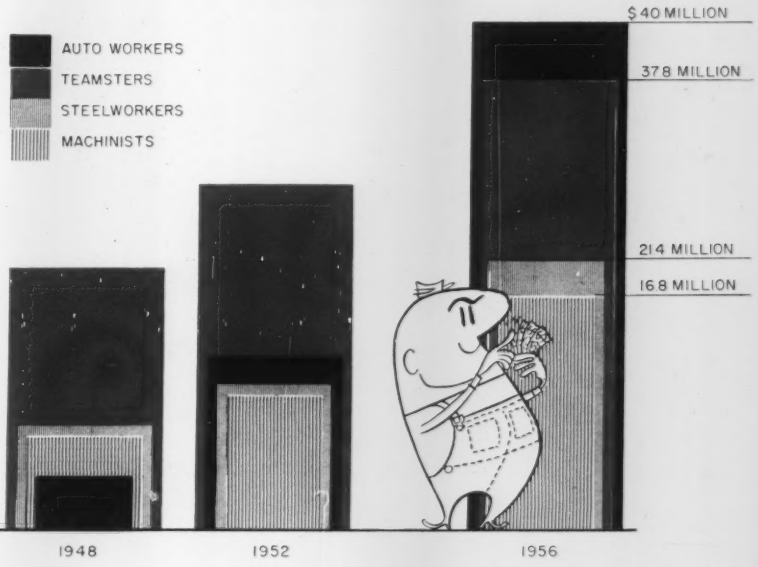
**Machine Tools**—In this field, the association says: "Evidence was submitted . . . to cause concern as to the reality of planning . ." It predicts the greatest bottleneck would be in the delivery of machine tools and related equipment. It endorses a tool reserve and the trigger tool program but suggests prototype production lines of items required in wartime which are limited in peacetime output.

**Components** — The association wants Defense's Preferential Planning List (PPL) of critical items kept as small as possible.

**Supply Sources**—Finally, the association accuses Defense of not following its own rules by failing to set up several sources of supply of critical end products: "Too often price prevails in the awarding of PPL items contracts at the expense of long range planning."

# Big Unions Are Big Business

**Financial Resources**




# Should They Be Regulated?

IN EIGHT YEARS, the combined resources of four unions—auto workers, teamsters, steelworkers and machinists—have grown from $39.6 million to $116 million.

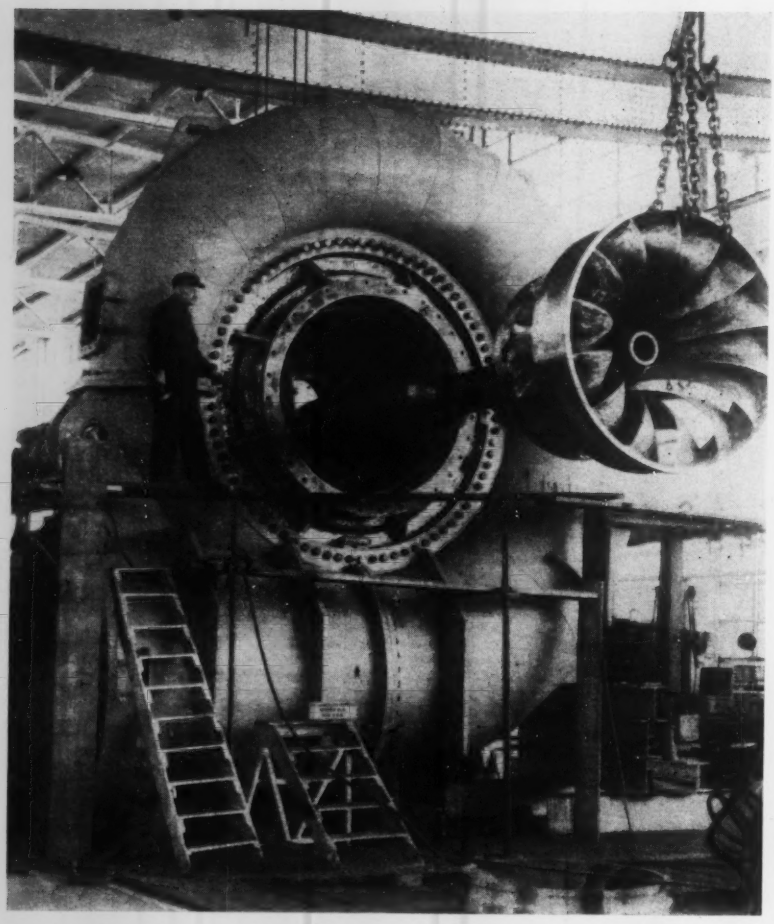
Accompanying that spectacular gain has been an alarming increase in union power to restrain business, charges H. A. Toulmin Jr., chairman, Commonwealth Engineering Co., Dayton, O.

In an article prepared for the August issue of *Competition,* Commonwealth's house publication, Mr. Toulmin points out that labor organizations control manufacturers by: 1. Preventing them from shipping their goods. 2. Lending them money. 3. Buying their stock. 4. Meddling in labor negotiations not concerning them.

**Double Standard**—If one business attempted to control another by such means, says Mr. Toulmin, it would be prosecuted for violation of antitrust laws. Unions are exempt on the ground that they are not businesses. "The men who voted for these exemptions," he continues, "were doing nothing less than selling their votes in Congress for support by the most unscrupulous elements in organized labor."

The Supreme Court has held three times that labor organizations are illegal monopolies. On each occasion, Congress has reversed the court by changing the law. Now the court has ruled that teamsters may refuse to handle the goods of a manufacturer whose plant has been struck by another union. "The court is not to be blamed," Mr. Toulmin asserts, "since it has simply construed the law as enacted by Congress."

**Remedy**—Mr. Toulmin advocates that the Supreme Court, its subordinate federal courts and the Department of Justice be given authority to maintain free commerce and to apply the antitrust laws without discrimination.



Scroll and gate casing of a Leffel turbine which was installed at Los Angeles

# Specialization Pays Off

**James Leffel & Co., pioneer builder of hydraulic turbines, resists diversification. After 95 years, this Ohio firm is still going strong in the field it knows best**

"WE'RE in a small industry with greater demands for technical background and capital investment than many that are much larger."

In those words, J. Robert Groff, president and general manager of James Leffel & Co., Springfield, O., offers a capsule judgment of the hydraulic turbine business, a highly specialized field in which Leffel has prospered.

To advocates of diversification, Leffel may look like an anachronism: Its products include nothing that is unrelated to the making of power. What's more, a major share of its income is derived from the sale of hydraulic turbines, the firm's chief product since 1862.

**Early Years**—When the company was founded, there were two known sources of power, water and coal. Water was used by mills to turn wheels of Leffel's design and to saw lumber, grind wheat, gin cotton, loom cloth and make paper —through mechanical drives. Coal was used to fire steam boilers.

After 1911, many water wheels were stripped of their belts and gears and were connected to generators. Water power was translated into electric power, with consequent gains in efficiency. Cashing in on its long experience with turbines, Leffel made additional progress in another field. It offered Scotch-type boilers to those who needed process steam.

**Products**—Today, Leffel's products include: Hydraulic turbines from the smallest sizes up to units of about 60,000 hp; Scotch-type boilers (to 500 hp) which can be fired with coal, oil or gas; stokers for Scotch boilers; steel pipe lines; drain valves; penstocks; headgates; headgate hoists; and trash racks.

It operates in a single highly integrated plant that has 135,000 sq ft of space. Facilities include a machine shop with vertical boring mills, lathes, planers and drills; a boiler shop; a gray iron and bronze foundry; a pattern shop; a power plant; and an office building.

**Employees**—Close to 200 are on the payroll—40 do engineering work. The company "makes" its own skilled workers by using men of long experience to train co-op students from high schools and colleges. High school students alternate four-week periods of classroom study with equivalent periods of factory work. Older men with no industrial experience are not disqualified. Leffel recently hired a cook, aged 40, and turned him into a lathe operator.

Unlike many other firms, Leffel makes no recruiting drives for engineers at colleges and universities; it accepts their applications and hires them as vacancies occur and their abilities warrant.

**Customers** — Government sponsored power projects, private utilities and industrial plants provide the principal markets for Leffel's turbines. Its Scotch boilers (for heating and process steam) are used by more than 100 industries.

Fifty years ago, about 100 domestic producers made hydraulic

turbines. Today, no more than ten are in the business. Leffel's competitors include Allis-Chalmers Mfg. Co., Milwaukee; Baldwin-Lima-Hamilton Corp., Eddystone, Pa.; Newport News Shipbuilding & Dry Dock Co., Newport News, Va.; and S. Morgan Smith Co., York, Pa. "Leffel's success can be attributed to the fact that it concentrates its efforts in a particular field and endeavors to produce efficiently in that range," says Mr. Groff. Other assets: A reputation for quality workmanship and good service; production of a boiler line which supplements turbine output; management's ability to co-ordinate the company's growth with that of the market.

**Expansion** — In 1935, Leffel bought the water wheel business of Trump Mfg. Co. and of Hoppes Water Wheel Co., both of Springfield, O.; last year it acquired the hydraulic turbine business of Rodney Hunt Machine Co., Orange, Mass.

Although the firm retains manufacturers' agents and territorial representatives, it often finds it preferable to use its own engineers as salesmen because of the increasing technicalities of the business. In sales to Latin American countries, it is sometimes represented by American electrical companies. In Canada, the firm cooperates with its associate manufacturer, Canadian Vickers Ltd., Montreal, supplying runners for turbines which that company fabricates. Leffel does not license foreign manufacturers for the building of hydraulic turbines under its designs.

**Markets** — The foreign market accounted for about one-third of Leffel's sales during the 1940s. With Europe at war, it was possible to sell successfully in Mexico and South America. Today, foreign sales are less than 5 per cent of the company's annual volume. Reason: Competition from European producers, whose labor costs are one-fourth those of Leffel's.

With the foreign market virtually closed to American turbine builders, domestic sales are vitally important. Mr. Groff and his colleagues express concern about the government's acceptance of foreign bids on domestic power projects.

# U.S. Leads in Atom Power

**Russian claims are discredited by Atomic Energy Commission official. U.S. nuclear power capacity will reach 133 million kw by 1977, one-fourth of total electricity needed**

THE U.S. is leading in the nuclear power race and will stay in front if it can transfer development from government to private industry economically, believes W. Kenneth Davis, director, Division of Reactor Development, AEC.

He thinks Russia's "plan" to have over 2 million nuclear kilowatts by 1960 is nothing more than bold exaggeration.

**Our Timetable**—Mr. Davis predicts the U.S. will have about 1 million kw of nuclear power capacity in operation five years from now. It will grow to 7.5 million in ten years, 43 million in 15 years and 133 million (close to our present electrical generating capacity) in 20 years. By 1977, we'll need four times that amount of power.

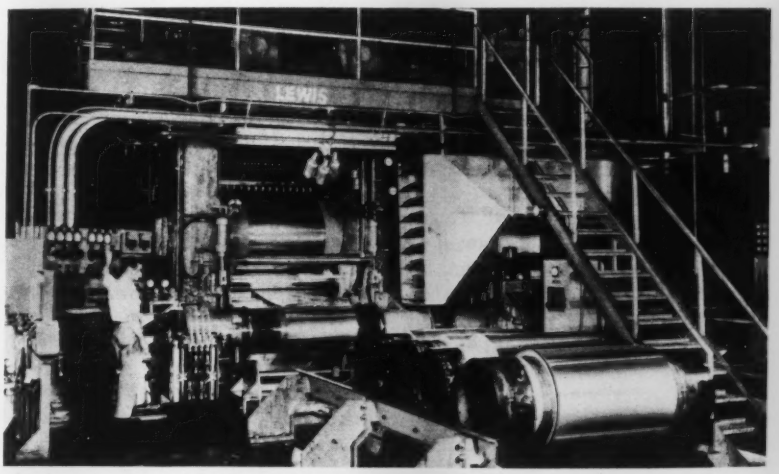
**USSR Program** — It appears that the Russians hope to obtain technological guidance by watching U.S. advances. Evidently, they have discovered that it takes more than a simple flow diagram to build a nuclear reactor, says Mr. Davis.

Actually, Russia's planned capacity is little more than 1 million kw, but he warns not to be complacent about their activity—or lack of it. Communist reports are vague; their capacity and know-how uncertain.

**British Gaining** — The United Kingdom is gaining ground rapidly, largely because it faces a different set of economic problems. Conventional fuel is not only scarce in England, but it's two to three times as expensive as it is in America. Development and maintenance costs are less expensive.

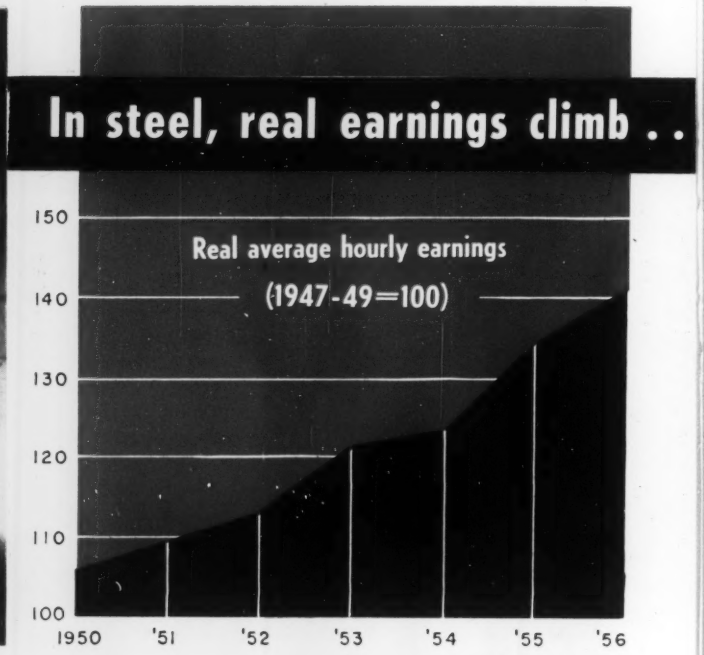
While the U.S. must develop an efficient reactor to compete with conventional fuels on a cost vs. productivity basis, the United Kingdom can effectively use the less economical reactors.

**U.S. Growth Factors**—The rate of development of the U.S. nuclear power industry depends upon: 1. The rate at which development is pursued and its success; 2. Its favorable transition to private industry. 3. The eventual economics of nuclear vs. conventional power.




**Kaiser's New Foil Mill Has Flexibility**

This mill was recently installed at the Ravenswood, W. Va., plant of Kaiser Aluminum & Chemical Corp. Built by the Lewis Machinery Division of Blaw-Knox Co., Pittsburgh, it has a top speed of 3000 ft per minute and can roll aluminum in gages from 0.026 to 0.00025 in.




# What Causes Inflation?

**The chance for a serious study of the question has been passed up by Congress. Don't expect anything better as we move closer to the election years of 1958 and 1960**

BUREAU of Labor Statistics' reports on productivity in U.S. manufacturing may be just too hot to handle.

(If you can decide what causes inflation, you have the answer to the most important problem in American economics. But if the party which controls Capitol Hill fears the decision, no answer will come.)

**No Congressional Action** — The charts above illustrate the steel industry's present predicament. The first two come from the Joint Economic Committee's study of "Productivity, Prices and Incomes." That committee is supposed to be the watchdog of the economy for Congress. Its bark is a little weak, however. The report has been available to Congress for a month; yet, no senator or representative has demanded an investigation of the causes of inflation as outlined in over 200 pages of data gathered from half a dozen government bureaus.

A committee staff member comments:

"We are waiting for someone else to pick up the ball. By its nature, congressional investigation must be specifically in terms of an industry or a company; our committee will not dig that deep."

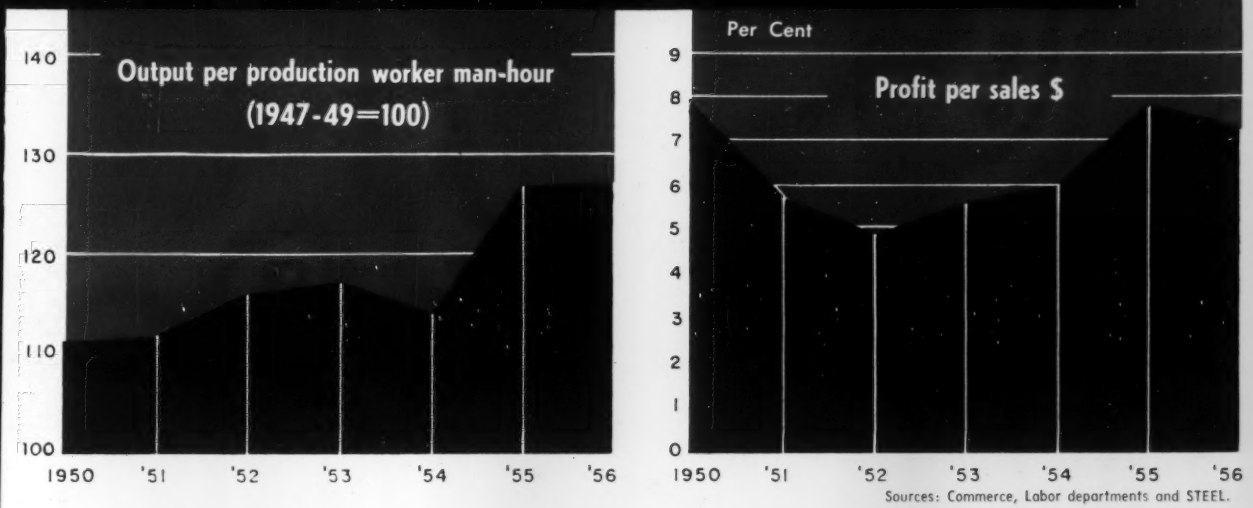
Productivity, prices and incomes, continues the committee staff man, are just a part of the bigger picture, which includes profits, marketing and general fiscal policy. Other congressional committees are at work, too.

Sen. Harry Byrd's (Dem., Va.) Finance committee is grilling the Treasury department on monetary matters; on Aug. 6, Sen. Estes Kefauver's (Dem., Tenn.) Anti-trust & Monopoly subcommittee will start to hear testimony from the steel industry on administered prices. But don't look for these efforts to get close to what many economists consider the root of our economic problems: The relationship between productivity and wages.

**Government Hedging** — In its part of the study, the Bureau of Labor Statistics carefully notes: "The answer to the question of whether the wage increases cause the price increase or vice versa cannot be determined from the figures alone."

Yet, average hourly compensation of private nonagricultural workers stood at 132.6 (1947 = 100) in 1956, and real production per employee hour was 126.1. While private nonagricultural production has gone to 182.9, employee com-

## faster than productivity . . . to pinch profits




Sources: Commerce, Labor departments and STEEL.

pensation was 183.5. Nonlabor payments were 182.1. (All figures are in constant dollars.)

**Industry's View**—One Washington source guesses that over $1 billion will be paid to workers this year in increased wages (based on contracts signed in 1955 and 1956). Those contracts include clauses for annual wage boosts plus cost of living increases. That $1 billion doesn't include wages negotiated this year and has no relation to increased productivity, he says.

Industries such as steel have been able to keep profits at even the present minimal levels (see third chart) through mechanization, better work methods and similar improvements. Proving that are ratios between the steel industry's wage bills and the value added by manufacture in the industry. Despite higher individual wages, the payroll as a percentage of value added has been dropping since 1952—47.4 per cent in 1952, 43.9 per cent in 1953 and 41.3 per cent in 1954.

**Labor's View** — Labor counters this argument: Cost of living increases come months after the higher prices are paid. Contends James Carey, president, International Union of Electrical Workers: "It is high time that the government investigate the relationship of prices and profits."

But a public study of profits would lead to wages, and the unions don't really want a full-scale investigation, no matter how loud they yell for it.

**The Middle Road**—Serious students of the economy in Washington (and there are more than you might think) are advocating a shift in congressional interest from inflation to another subject: Automation's effect on the economy during the 1960s. They regard inflation as political dynamite which no legislator, no matter how honest, can force himself to live with for long. In a study of automation, the shorter work week and the power of Congress to enforce the Full Employment Act, the economists think we might get to practical cases at last.

---

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

## Missiles Appear in Write-Offs

Ten new certificates of necessity for accelerated tax amortization have been issued by the Office of Defense Mobilization under the goal for production facilities for military or AEC procurement. One other was issued under the steel castings goal. Total certified exceeded $30.5 million.

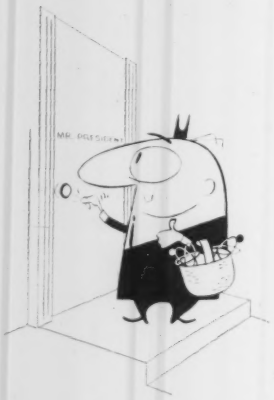
Largest amounts involved uranium mining and processing facilities: Homestake-Sabin Partners, Valencia and McKinley counties, N. Mex., 80 per cent on $12,250,-400; Texas-Zinc Minerals Corp., Mexican Hat, Utah, 80 per cent on $8,452,366, and Homestake-New Mexico Partners, McKinley county, N. Mex., 80 per cent on $207,-190 (mining only).

For guided missiles facilities, Martin Co., Orlando, Fla., was allowed 65 per cent on $2,879,250, $1,272,300 and $887,685.

For steel castings facilities, National Malleable & Steel Castings Co., Superior, Wis., was granted 65 per cent on $3,475,000.

Military jet engine parts were included in other certificates.

## Public Power Block Forces Ike's Hand



THE administration is going to have to live with public atomic power:

The Joint Atomic Energy Committee has approved a public power enthusiasts' bill which provides for the operation of federally designed and built power reactors by five co-operative groups. The Atomic Energy Commission wanted the groups to build the reactors themselves, but the energy built up by the recent Idaho Power-Hell's Canyon controversy has spilled over into a flood of protest against giving private power companies too much control over our atomic power programs. It will be almost politically impossible for administration forces to ask the President to veto the bill.

This action won't keep private industry from developing its own atomic power plants, of course, but it isn't designed to encourage them either. (See page 59 for latest estimates of the growth of atomic power for electricity in the U.S.)

## Move To Dump AEC Grows

Democrats are pushing the idea that the AEC is too big and powerful. Look for a move in 1958 at appropriations time to get some of the AEC functions split off: Radiation effects, to the U.S. Public Health Service; nuclear weapons, to Defense department; nuclear power, to Federal Power Commission; industrial atomics, to Commerce department.

## More On an Iowa Steel Mill

North American Steel Co.'s drive for an integrated mill at Clinton, Iowa, isn't dead, yet. The firm has applied for another extension to its request for fast tax write-offs on a $300-million mill. First requested six years ago, North American has had five extensions while it looked for the money to finance the 1-million-ton unit. It has told Office of Defense Mobilization it can start construction in December.

North American has a technical chance of getting the write-off because its application was in long before the steel expansion goal was closed in 1953. If ODM granted such a proposal, however, it would open itself up to giveaway charges.

## GSA Puts Pressure on Aluminum

In an unusual maneuver last week, Franklin Floete, head of the General Services Administration, requested a hearing before the Joint Committee on Defense Production. Subject: Aluminum "puts." (Under the Defense Production Act, Aluminum Co. of America, Kaiser Aluminum & Chemical Corp. and Reynolds Metals Co. have been putting excess production to the aluminum stockpile.)

Putting began last December. As of July 10, the three firms had sold GSA 582.5 million lb (Alcoa, 351 million lb; Kaiser, 127.5 million lb; Reynolds, 104 million lb) at 25 cents a lb. The material is worth $145.6 million.

GSA's objection: Alcoa and Kaiser are importing aluminum from Canada under contracts calling for delivery of 1.5 billion lb. The committee wants to know: Is the government buying aluminum at 25 cents, while the U.S. firms are importing it at less?

## It Wants To Control "Puts"

But GSA is after something more solid. Mr. Floete told the committee he has been negotiating with Alcoa and Kaiser to limit their puts on the basis of their Canadian imports. Under the contracts with the three biggest aluminum producers, GSA can be required to take as much as 1.37 billion lb; the last contract (one with Reynolds) expires in July, 1959; the others expire this year or next. Since Reynolds doesn't import Canadian aluminum, Mr. Floete isn't too concerned with its puts, but he wants Alcoa to deduct 75 per cent of its imports from what it has a right to put, Kaiser 80 per cent. In addition, he wants Alcoa to increase its offering to nonintegrated aluminum mills from the present 25 per cent of production to 35 per cent, Kaiser from 25 per cent to 33.3 per cent.

The two companies tentatively agree to the suggestion, and Mr. Floete brought it before the committee before clearing it with other U.S. agencies.

Committee Chairman Sen. A. Willis Robertson (Dem., Va.) is openly doubtful of the whole stockpile program.

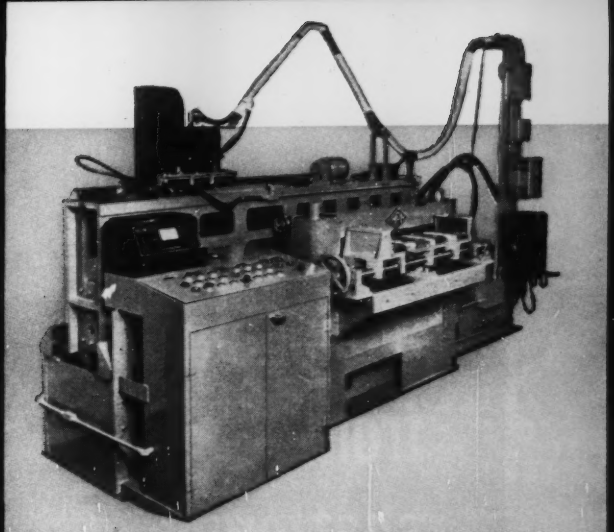
## U.S. Tool Funds Asked

Sen. John Sparkman (Dem., Ala.) has introduced S2595 to establish working funds for the "procurement and replacement" of government machine tools and related production equipment. It's now in the hands of the Armed Services Committee and could be voted out before this session of Congress ends. The bill stands little chance of getting through both houses though. Defense Mobilizer Gordon Gray proposed the funds last spring (STEEL, May 13, p. 75).

Funds for tools will come from three sources if the bill is passed:

1. Rentals from private industry.
2. Price concessions to the government based on the free use of tools.
3. Depreciation allowances of tools owned by the U.S.

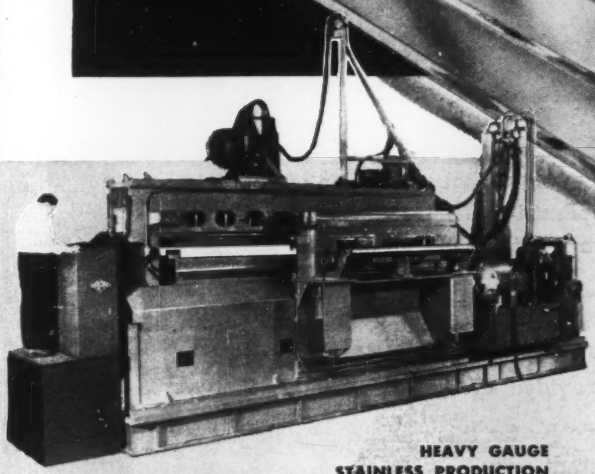
# THE NEW MPM Shear Welder



**CONTINUOUS SILICON SHEET PRODUCTION**

Shearwelder for coil build up line for 42" wide Silicon Steel from .015" to .030" thick.

## .....more automation for even faster Steel Production!



**HEAVY GAUGE STAINLESS PRODUCTION**

Shearwelder for butt welding 60" wide x .250" thick Stainless Steel.

● Metal Processing Machine Company's new Shearwelders are outstanding because of their advanced design incorporating automatically sequenced operations.

Shearing and welding are performed at the same station with positive clamping right at the work area, thereby insuring perfectly aligned butt welds.

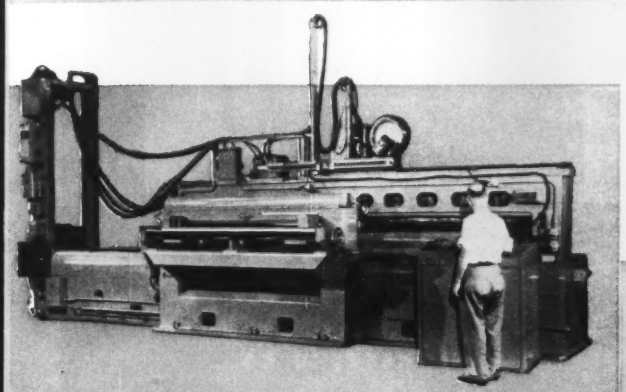
"M.P.M." welds are **extremely ductile,** permitting subsequent rolling, forming, or blanking operations. Weld joints are smooth and require **no trimming.**

Rugged construction is insurance for minimum maintenance and compact design saves floor space.

**THE METAL PROCESSING MACHINE CO.**

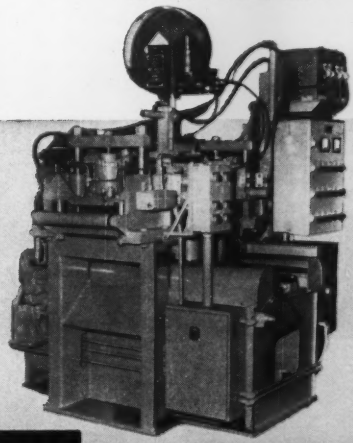
**SUBSIDIARY OF McKAY MACHINE CO.**
**YOUNGSTOWN, OHIO**

McK
MPM



**MAJOR COIL BUILD UP**

Shearwelder for Carbon Steel coil build up line for .015" to .060" thick x 72" maximum width.



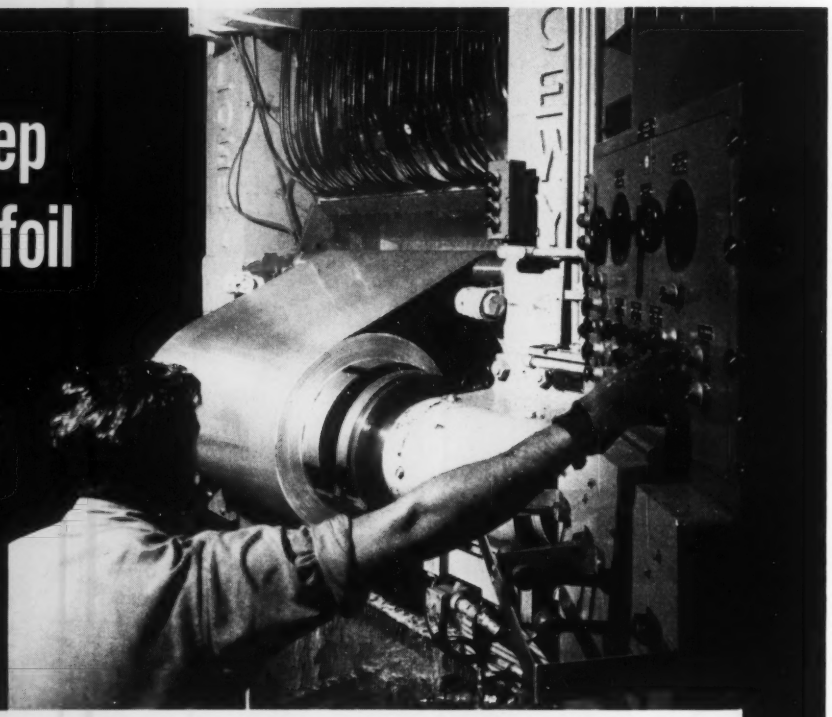
**CONTINUOUS TUBE MILL PRODUCTION**

Shearwelder used with strip looping device for splicing coil to coil to permit continuous production of tube mill.

10065

# how to keep aluminum foil from shattering

*... at 35 miles per hour!*



Kaiser Aluminum & Chemical Corp. increased annual production of aluminum foil 50% at its Permanente, California plant through installation of a four high foil mill. This mill reduces aluminum strip in thickness from .026 to .00025 of an inch at speeds up to 3000 fpm.

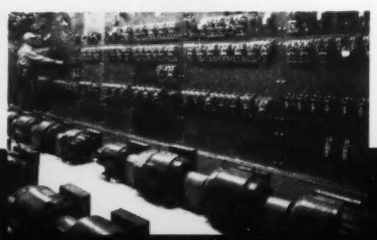
At 35 miles per hour, excessive strain at any of the several reduction stages would shatter the extremely thin foil. From the original payoff reel through to the final rewind, uniform tension is provided by Reliance V★S Drives.

Reliance engineers built this drive specifically for this mill, to provide the constant uniform tension which is so important.

This application is typical of the many diversified jobs that Reliance V★S Drives are called upon to perform. There is a Reliance V★S Drive to fit your application.

D-1562

*For further details, write* **Dept. 48A**



Main control room—Where Reliance equipment provides more than 2,900 hp. to drive this mill.

**RELIANCE ELECTRIC AND ENGINEERING CO.**

CLEVELAND 17, OHIO • CANADIAN DIVISION: WELLAND, ONT.

Sales Offices and Distributors in Principal Cities

## Samples of SIC Revisions

While none of the 20 established major 2-digit groups of the standard industrial classification has been eliminated, merged or changed, numerous products and groups of products have been regrouped or moved from one major classification to another. Here are examples in the major metalworking groups—33 through 37.

**Major Group 33—Primary Metal Industries**

Old SIC put blast furnaces in industry 3311 under major group 33 and steelworks and rolling mills in 3312. Now both are put in one industry, SIC 3312.

**Major Group 34—Fabricated Metal Products**

Classifications for coatings, engravings and allied services, formerly in 346, have been shifted to 347. That number once meant lighting fixtures. An SIC detective now finds lighting fixtures deep in an entirely different major group —36.

**Major Group 35—Machinery Except Electrical**

The machine tool industry is defined differently in the revised SIC. It's divided into machine tools-metal cutting types (3541), machine tools-metal forming types (3542), dies, tools, jigs and fixtures (3544) and machine tool accessories and measuring devices (3545).

**Major Group 36—Electrical Machinery**

Electrical and electronic measuring instruments, assigned 3613 under old SIC, get a new home in 3611, which has been broadened in the revised SIC. Under old SIC it meant just wiring devices and supplies.

**Major Group 37—Transportation Equipment**

Guided missiles, which formerly had industry number 3721 (aircraft), are shifted to Major Group 19—Ordnance, and are assigned number 1929.

# Census SIC System Revised

A MARKETING TOOL has just been honed to new sharpness, but it won't be in wide use by industry until 1958 and 1959.

It's the government's standard industrial classification (SIC), a system under which industry groups are assigned numbers for identification. U.S. Bureau of the Census statistics are gathered according to SIC breakdowns. Many companies now use SIC for their marketing research purposes.

**Old Pattern Holds**—The government's 1954 Census of Manufactures, now being published, continues under the old system. For that reason, STEEL's new book, *Metalworking Markets in the U.S.A.*, uses the old SIC. Most companies already using SIC won't need to convert for another year or two.

That's because the government won't make extensive use of its new SIC until the Census of Manufactures for 1958, which won't start being published until about 1959. But for companies planning to go to SIC for the first time, it would be wise to adopt the new classification.

**New Pattern**—Copies of the government's *Standard Industrial Classification Manual—1957*, which describes the revised pattern, can be purchased for $2.50 from the U.S. Superintendent of Documents, Washington 25, D.C., or from any Commerce department field office.

A task force to study revisions has been working since 1953. The job took one year longer than expected. Much of the initiative for the task originated with the Advisory Council on Federal Reports, a private group. A task force chairmanned by P. K. Lawrence of E. I. du Pont de Nemours & Co. recruited more than 300 industry representatives to work on 26 different industry committees to examine industries, definitions and descriptive material for each SIC group. Their work was under the general supervision of Horace Stringfellow of U.S. Steel Corp. The final document now available for use beginning in 1958 or 1959 represents a compromise between changes industry people proposed and what government people thought practical.

**Origins** — While classification patterns were developed by the Census Bureau during the early days of the Census of Manufactures, the first standard system applying to all U.S. statistics didn't evolve until 1945 when the government published the first SIC manual.

By the time of the 1954 Census of Manufactures, the Census Bureau found it had to make a number of departures from old classifications because they were ambiguous, either from inadvertency or from extensive industrial changes obsoleting old categories.

The revisions should help you pinpoint markets more exactly for a more effective marketing job.

## How Many People Do What in Marketing?

(color rules indicate areas where more people are or will be needed)

| | |
|---|---|
| **LINE SALES** | **3,300,000** |
| **PROPRIETORS & MANAGERS** | **3,000,000** |
| **Service Workers** | **2,700,000** |
| **Delivery & Operating Personnel** | **2,350,000** |
| **CRAFTSMEN & SUPERVISORS** | **1,450,000** |
| **Clerical** | **1,390,000** |
| **PROFESSIONAL** | **475,000** |
| **Manual laborers** | **335,000** |
| **Total** | **15,000,000** |

Estimates by STEEL, based on Bureau of Census and U.S. Chamber of Commerce figures.

# Needed: More Marketers

**A changing economic climate puts more emphasis on marketing. Look for a greater demand for marketing personnel. Here are tips on what you can do now**

THE NEXT serious personnel shortage will come in marketing.

It's not widely noticeable yet, but here are some warnings:

- Display classified advertising in the ten most populated areas shows that an average of 121 positions in marketing were open each week in the first half of 1957, compared with 107 per week in the second half of 1956. The information comes from Executrend, a continuing survey conducted by Heidrick & Struggles, a Chicago management placement firm.
- "Definitely more sales jobs have opened up in the last few months," says Dale E. Barbee, placement director at Case Institute of Technology, Cleveland.
- "Every one of our recent marketing and merchandising graduates has been able to get a job readily," says Mrs. John A. Le Bedoff, director of placement service for Western Reserve University, Cleveland.
- "Since the first of the year, a pronounced shift has occurred in our personnel needs," says the personnel manager for a Philadelphia company. "The clamor used to be for engineers. Now that has let up a little, but the pressure's mounting to get marketing men."

**What's Marketing?**—The term implies the integration of all functions in finding out what is wanted, measuring the demand, planning the product and moving it to the final user. It involves product planning, customer research, marketing research, advertising, sales promotion, sales, distribution and service.

Of an estimated 15 million people employed in all phases of marketing in America (see table), about one-third are in managerial or specialized roles. The shortages will be most severe there and in line sales jobs. Specialized functions include market research, advertising, sales promotion. National Sales Executives Inc. estimates that American industry is short more than 400,000 people in the sales area alone.

**Why a Shortage?** — Marketing personnel are and will continue to be scarce because of the change in economic conditions. We have achieved a balance between supply and demand in almost every segment of industry. In some cases, supply exceeds demand. When the balance was the other way, the emphasis was on production—and on the people, such as engineers, needed to achieve more output. Now the emphasis is on sales — and on the marketing people to dispose of more goods.

The shift in emphasis has led to the broader concept of marketing, as opposed to the more limited idea of sales (STEEL, June 17, p. 93). The restructuring of organizations to embody the marketing philosophy may have led to considerable slippage in figuring the number of people needed, believes James H. Riggs, manager of marketing research for Bendix-Westinghouse Automotive Air Brake Co., Elyria, O. But he and others agree that, even if the shortage is overestimated, it still exists.

**What To Do About It**—You can relieve the scarcity and prepare for its increasing severity three ways: 1. Make better use of the marketing people you have. 2. Keep those you have. 3. Recruit and train new ones.

**Better Use**—U.S. manufacturers probably employ 600,000 of the nation's 3.3 million sales people. That's an increase of about 30 per cent from prewar days, yet each sales person is being asked to sell more than twice as many goods. It's the whole marketing team's job to make those sales people more productive. Each call by an industrial salesman costs an average of $21; every sale, $230. You're wasting time, money and effort if your salesmen are chasing smokestacks, talking to poor prospects or neglecting good ones.

Needed is a marketing policy, says R. J. Miller, Cleveland Electric Illuminating Co.'s manager of sales promotion. It should state objectives and work out the budget in terms of people and money to carry out the goals.

Ideal planning includes concentrating on the big buyers in the top 30 per cent of the market but

## To relieve the shortage in marketing personnel . . .

### Know your markets better

1. What are total requirements of each prospect and customer?
2. What percentage of each customer's needs are you selling?
3. What accounts are unprofitable to sell?
4. What old customers have stopped or curtailed buying? Why?
5. When did a salesman last call on each customer and prospect?
6. How does each salesman's performance compare with his quota?
7. Which territories are too large or small for one salesman?

### Keep the good people you have

1. With fair compensation.
2. With personal recognition and fair credit where it's due.
3. With their participation in as many marketing plans and decisions as possible.
4. With greater understanding of an individual's problems.
5. With a good supervisor in whom subordinates can have confidence.
6. With a product that can be respected.
7. With ample opportunity for personal advancement.

### Train your people better

1. Get management approval and participation in training.
2. Be sure that the budget for training purposes is adequate.
3. Select the right people to do the training.
4. Train the trainers.
5. Keep checking results to correct bad points in the program.
6. Have a continuous program for new personnel and a periodic retraining program for more experienced people.
7. Pick and train potential supervisors.

still not neglecting the potentials among the less exploited 70 per cent. It's the market analyst's job to sift out the top 30 per cent. It's the advertising and sales promotion manager's task to prepare them for the salesman's call.

An Indiana company found that over 40 per cent of its accounts were unprofitable—they added only 10 per cent to sales volume. By dropping them gradually, the firm cut marketing expenses in half. Another company found that nearly half its stock brought in less than 5 per cent of volume. Eliminating some items and handling others on a special order basis had little effect on volume but increased profits markedly.

**Keep What You Have**—How do you keep good marketing people from quitting? Robert Zinn, vice president-sales for Standard Register Co., Dayton, O., producer of business forms and systems, says it costs his company $6500 to break in a new salesman. There are few figures available on other types of marketing personnel, but the expense is high.

You can reduce personnel turnover through better selection and placement, adequate training, improved internal communications, high-caliber supervision and equitable compensation. Inequitable pay is rarely the sole reason for a man leaving. But pay must be fair. A top market analyst should make about the same as a top salesman. Too often a salesman's earnings are higher than those in other areas of marketing. Here's a rough indication of average compensation for salesmen these days: A cub—$600 per month; a medium performer (in sales volume, age and tenure) — $1000 per month; a top performer—$1500 per month.

**Recruit and Train**—Recruiting techniques for marketing personnel are the same as for engineers or any other type of job—college visits, advertising, referrals by your employees.

Marketing management finds its greatest problems in training. Some 10 per cent of the 15 million in marketing are still inexperienced, estimates the U.S. Chamber of Commerce. (The ratio isn't that high in manufacturing.) It's costing about $1.5 billion a year to train these people—also relatively more than it's costing in manufacturing.

Here are some ways you can spend your training dollar more effectively.

One approach is to study some of the techniques used to train production employees — high-caliber supervisors, movies to show how the job should be done, arrangements with neighboring colleges or high schools to handle some courses.

Another approach is to extend your sales training to other marketing personnel or to adapt training schools of other organizations to your own purposes if you have none.

Marketing expenses take an average one-tenth of the sales income dollar in 64 companies surveyed by American Management Association. That cost ratio will rise if you aren't prepared to meet present and future personnel shortages. One year ago, an aircraft company estimated its engineering expenses would have been cut 20 per cent if it had had enough engineers. Can you afford marketing costs one-fifth higher because of insufficient marketing people?

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

# "for VERSATILITY FLEXIBILITY and ACCURACY you can't beat a . . . BULLARD

# H.B.M."

MODEL 75

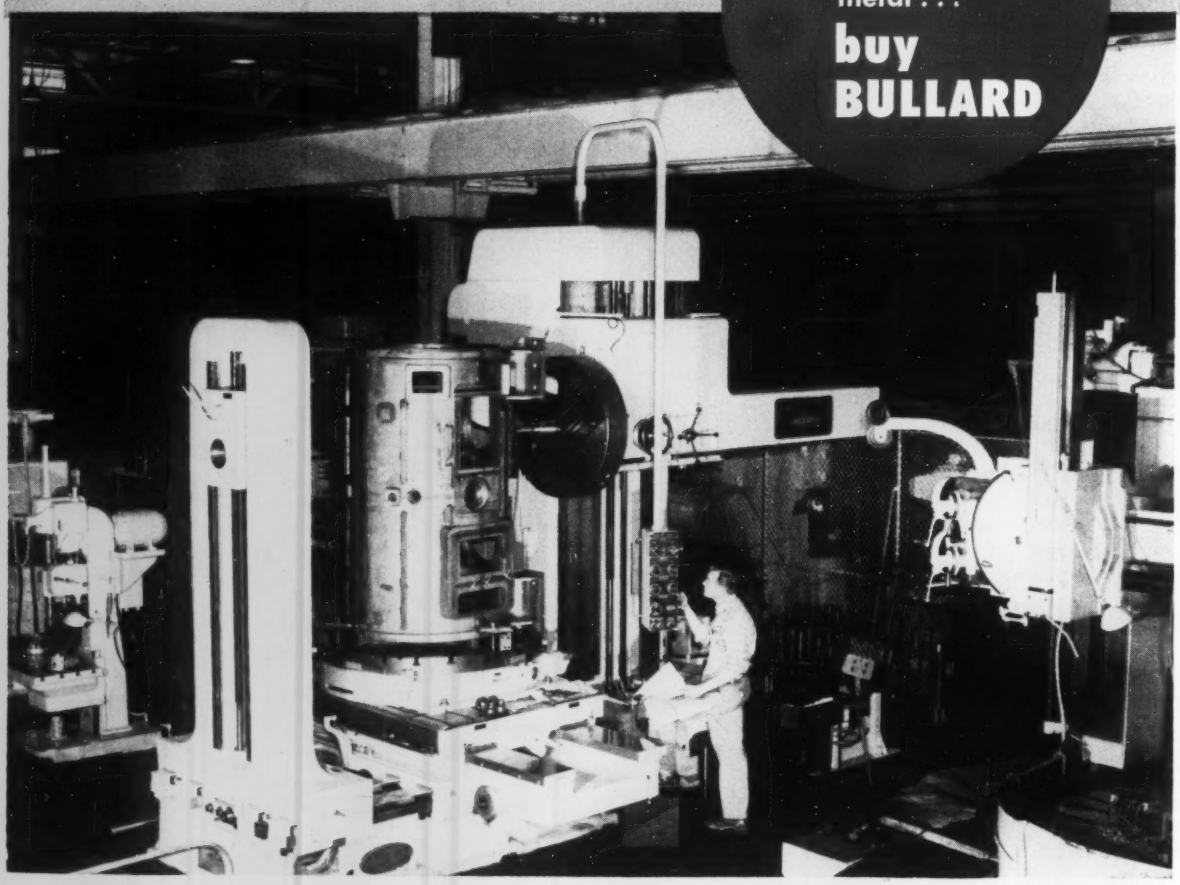
This statement, by the Planning Engineer of a Midwestern manufacturer of Diesel locomotives, sums up their experience with a 5" Bullard H.B.M., Model 75 after months of use.

The operations successfully performed include facing, drilling, tapping, reaming and boring on a wide variety of jobs.

A Bullard Sales Engineer will be glad to tell you about the many features which make the Bullard HBM, Model 75 your best buy — just call him.

THE BULLARD COMPANY
BRIDGEPORT 9, CONNECTICUT

*Remember —* to cut costs when cutting metal . . . **buy BULLARD**



# UAW Vs. Decentralization

**Union is disturbed because auto makers and suppliers are moving some operations out of Michigan. Calls strike at Monroe plant in effort to prevent transfer of equipment to Georgia**

LOOK FOR the United Automobile Workers to step up its campaign against decentralization as more car builders and their suppliers show inclinations to move out of Michigan to escape a tough corporate tax situation and high labor rates.

The UAW doesn't seem to be disturbed by the principle of decentralization per se, but it is up in arms because of its end result in Michigan. A labor surplus exists, according to Michigan's Employment Security Commission, and the UAW feels it must be strong enough in its own backyard to maintain solidarity around the country.

**Policy**—Walter Reuther, UAW president, voiced the union's position a year ago when he warned members of the Dodge local in Detroit: "If Chrysler moves Dodge out of Hamtramck, it will become a ghost town."

That kind of desperate thinking was used in the union's fight for transfer rights at Chrysler (STEEL, May 27, p. 68), and now it looks as if the same line will be taken against other firms, particularly auto suppliers, that move to join the exodus.

**Example**—Monroe Auto Equipment Co., Monroe, Mich., is feeling the effects.

A study of the Maeco strike illustrates what conditions prod the UAW into action. Auto suppliers with decentralization plans might keep these facts in mind.

**Firm Moves Out** — Maeco produces shock absorbers, sway bars, power steering parts and other suspension components. It has two plants in Monroe and one in Hillsdale, Mich. The company recently built a fourth plant in Hartwell, Ga.

The Hartwell plant is not organized. It has about 250 employees, compared with 650 in Monroe and 100 in Hillsdale.

William D. McIntyre, executive vice president and general manager, says one of the basic reasons for building the Hartwell plant was that shipping costs are cheaper from Hartwell to 65 per cent of the Ford Motor Co. plants which buy Maeco shocks.

People in Monroe say the UAW has feared the firm would eventually move all operations to Georgia.

Mr. McIntyre says this won't happen. He points out the company has been in Monroe since 1917, adding: "We have too great a capital investment in Monroe to pull out now."

**Blames High Wages**—At the same time, he admits Monroe's wage rates are among the highest in the state. This, even more than high taxes, has kept the company from increasing its local work force, he says.

As an example, Mr. McIntyre cites payment by Maeco of 15 cents an hour more to assemble sway bars than does Ford at its parts plant (also in Monroe, but under a Detroit UAW contract).

A wage study by the state's Employment Security Commission confirms that Monroe's labor rates are among the highest in Michigan.

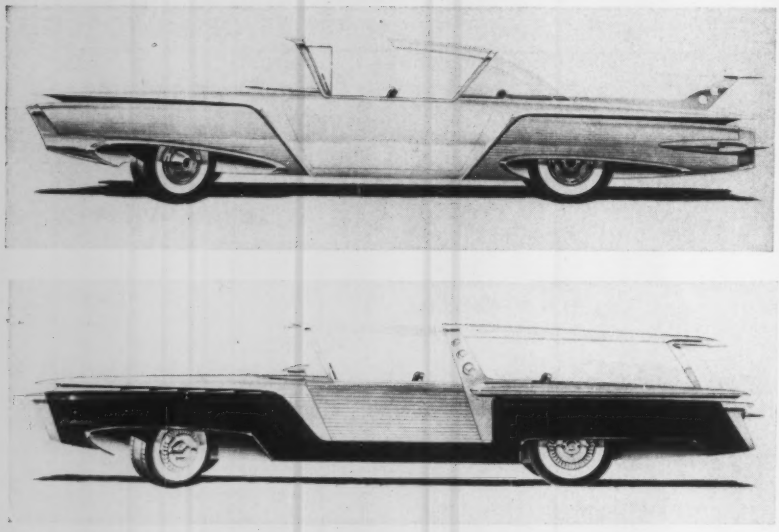
"These are the reasons why independent suppliers can't bid economically enough to keep auto makers from bringing work into their own plants," explains Mr. McIntyre. Last year, the company bid on $65 million worth of work which it didn't get. Mr. McIntyre feels high wages are one of the reasons bids were too high.

**Grievances Mount**—Mr. McIntrye says grievance costs have been averaging $35,000 a year in Monroe, compared with $2000 in Hillsdale.

Current difficulties started last year when the company bid on a Ford contract. Mr. McIntyre claims the company made an agreement with UAW Local 878 that if Maeco got the job the work

UAW is fighting transfer of equipment from Monroe, Mich., plant to Hartwell, Ga., plant of Monroe Auto Equipment Co. Company says it's needed to fulfill contract with Ford which local agreed to last year

*(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)*



**Dream Cars Sketched by Aluminum Producer**

Kaiser Aluminum has come up with these composite designs to point up how use of aluminum could be extended in the automotive field. Featured are extruded frame members, rolled-down doors and cast bumpers

would be done in Georgia. Apparently, it never was clearly established that this would require moving some equipment from Monroe to Hartwell.

**Strike**—When the move started this June, Local 878 charged the transfer of equipment was against contract provisions. It struck one plant in Monroe and has obtained an injunction to prevent the company moving out equipment.

Both the union and Maeco feel the strike will be settled shortly. The international has stepped in, and Emil Mazey, international UAW vice president, is leading the union side in negotiations.

There's talk of a wage fight between the international and Local 878. There also are hints the union offered to settle if Maeco would guarantee it a closed shop in Hartwell. All parties involved deny the rumors.

Despite the battle, Mr. McIntyre says he expects gross sales this year will total between $16 million and $17 million, compared with $13 million last year.

**Future Cloudy**—The strike continues, and 360 workers are idle. Mr. McIntyre says it will remain closed until the contract expires Sept. 1, 1958, if necessary. "Then we'll hire people not covered by a contract," he asserts. If this happens, Maeco could become another Kohler Co.

## Ford Says Sales Are Up

First half reports show Ford Motor Co. has increased its sales to a record $3 billion, 27 per cent above last year's. Net earnings were $171 million ($3.15 per share), compared with $131.7 million ($2.44 share) in the first half of '56.

Factory sales of cars and trucks totaled 1.1 million. Henry Ford II, president, says that's the second highest first half in company history, exceeded only by 1955. Last year Ford sold just over a million vehicles in the first half.

### U.S. Auto Output

| Passenger Only | 1957 | 1956 |
|---|---|---|
| January | 642,089 | 612,078 |
| February | 571,098 | 555,596 |
| March | 578,826 | 575,260 |
| April | 549,239 | 547,619 |
| May | 531,365 | 471,675 |
| June | 500,271 | 430,373 |
| 6 Mo. Total | 3,372,888 | 3,192,601 |
| July | ... | 448,876 |
| August | ... | 402,575 |
| September | ... | 190,726 |
| October | ... | 389,061 |
| November | ... | 581,803 |
| December | ... | 597,226 |
| Total | ... | 5,802,808 |

| Week Ended | 1957 | 1956 |
|---|---|---|
| June 29 | 125,909 | 103,034 |
| July 6 | 73,682 | 68,110 |
| July 13 | 111,943 | 112,361 |
| July 20 | 124,894 | 113,416 |
| July 27 | 128,149† | 120,416 |
| Aug. 3 | 130,000* | 124,416 |

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

## GM Says Income Is Down

General Motors reports net income for the half of $481 million ($1.71 per share), compared with $503 million ($1.80 per share) last year.

Even though income is off, Harlow Curtice says GM's dollar sales ($5.9 billion) are second only to 1955's first half. Last year, first half sales were $5.8 billion. In 1955, they totaled $6.5 billion.

Mr. Curtice says the corporation has sold 1.7 million cars and trucks from U.S. manufacturing plants so far in 1957. That's 11 per cent below last year at the same time.

Unit vehicle sales from all GM manufacturing sources are only 8 per cent below 1956's.

## Chrysler Keeps Smiling

Confirming earlier reports, L. L. Colbert, Chrysler president, says the corporation's first half dollar sales totaled $2 billion, an increase of 44 per cent over the $1.4 billion total in the same period of 1956.

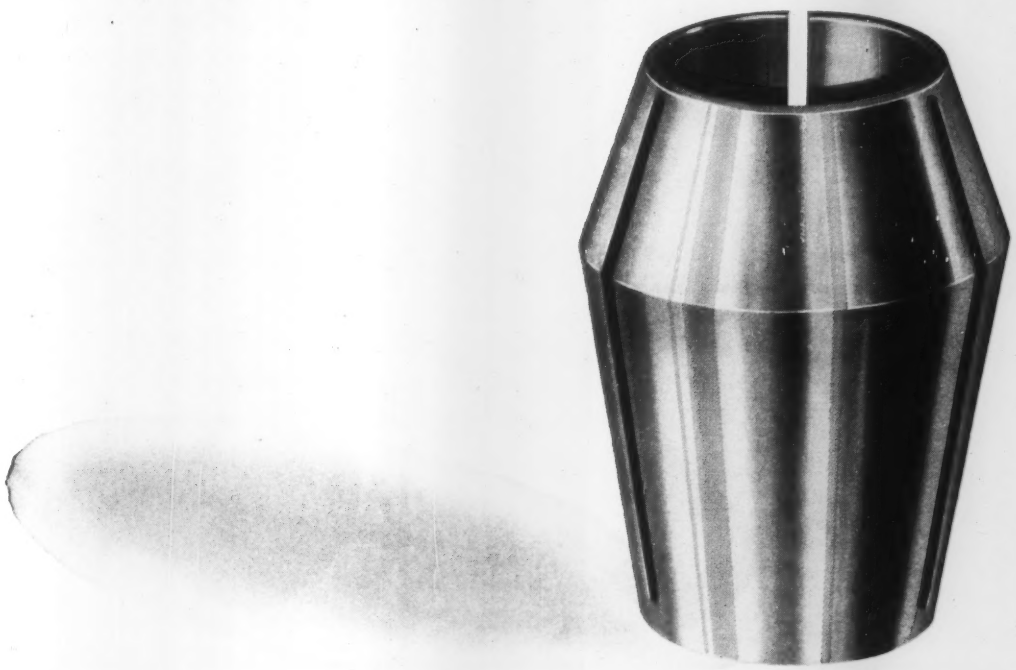
Net earnings are $98.7 million ($10.28 per share), compared with $18.6 million ($2.14 per share) last year.

Defense sales have declined from 8 per cent last year to 3 per cent of total sales for this year's first half, adds Mr. Colbert.

During the first six months, Chrysler shipped 817,501 cars and trucks. Last year it shipped 592,501 vehicles in the first half.

## GM Gets Tax Aid

The Office of Defense Mobilization announced that General Motors Corp. may write off $4,586,850 in taxes during the next five years for depreciation on its guided missile plant at Oak Creek, Wis.



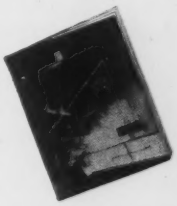
# 19% PRODUCTION INCREASE AND SUPERIOR FINISH

*when Universal Engineering Co. switched to*

**LEADED 6150**

In the production of this collet, Universal Engineering Co. reported it was able to increase spindle speed from 308 to 374 R.P.M. and machine speed from 108 to 125 S.F.M. Feed was stepped up from .0027 to .0047 inch per revolution. In addition to a production increase from 101 to 120 pieces per hour, finish was greatly improved and tool life was extended appreciably.

These are typical benefits obtained by users of lead treated Aristoloy Steels—benefits which you can enjoy by getting in touch with your nearest Copperweld district office.



**JUST OFF THE PRESS**
*New Leaded Steel Catalog.*
*Write for your copy today.*

**COPPERWELD STEEL COMPANY • Steel Division**
4005 Mahoning Avenue • WARREN, OHIO
EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N.Y.

ARISTOLOY STEELS

*For tricky shapes like these...*

## Steel that's hard and tough but easy to machine

PARTS like slitter knives, collets, split bearing races and the others shown above have to be hard and tough. But because of their intricate shapes, they have to be made of a steel that's easy to machine. This combination of toughness and machinability isn't easy to find. But you get it in Timken® 52100 steel.

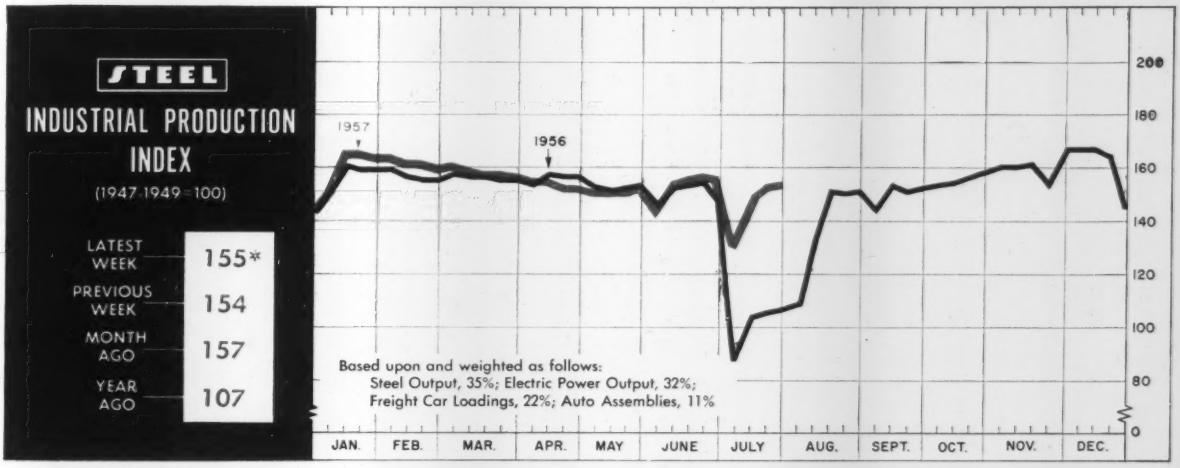
Timken 52100 steel has a fully spheroidized structure that makes machining easy—without sacrificing strength or hardenability. It is a high-carbon analysis alloy steel with high fatigue and tensile strength and good hardenability throughout its cross section. Timken 52100 steel withstands working pressures up to 200,000 p.s.i., can be oil quenched to a maximum hardness of 65/66 Rockwell C in normal sections. And you can be sure of uniform quality in every shipment of Timken 52100 steel, because the Timken Company controls quality through every production step, from furnace to final inspection.

The Timken Company pioneered the production of 52100 steel tubing in the U. S. We're one of the world's largest producers of this hard, tough steel and the *only* source of 52100 steel in three finished forms—bars, tubing and wire. For small run or emergency requirements, we maintain a mill stock of 52100 tubing, in 101 sizes ranging from 1″ to 10½″ O.D. Write for a complete stock list of available sizes, grades and finishes. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

# TIMKEN *Fine Alloy* STEEL

TRADE-MARK REG. U. S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING




*Week ended July 27.

# Indicators Show Basic Vigor of Business

IT now seems pretty certain that the over-all economy has enough momentum to make a strong finish in 1957.

Here's STEEL's estimate of what some of the major economic indicators will average for the year (comparison is with 1956):

Gross national product, $430 billion vs. $412 billion.

New plant and equipment expenditures, $37.4 billion vs. $35.1 billion.

Federal Reserve Board index of production, 145 per cent of the 1947-1949 average vs. 143 per cent.

U.S. auto assemblies, 5.8 million, no change.

Steel output, 117 million tons, which will equal (or slightly surpass) the previous peak of 117 million tons in 1955.

## Appliances Pick Up

Among the encouraging signs of a good second half is the comeback being made by major appliances.

The American Home Laundry Manufacturers' Association reports that factory shipments of home laundry appliances during June increased 14 per cent over those in May—although shipments of 341,062 units were 15 per cent beneath the year-ago figure.

Guenther Baumgart, executive director of the association, says a number of factors point toward a more favorable second half. There are widespread reports of increases in retail sales during recent weeks, and retail inventories appear to be declining.

Another plus factor: New models are beginning to show up. They usually stimulate sales in the fall. June dryer sales were 48 per cent greater than they were in May, which may mark a turning point for industry sales.

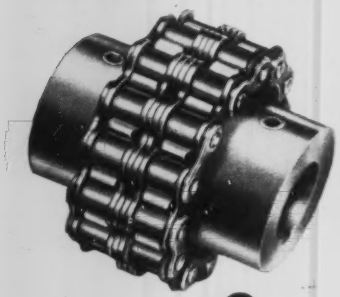
**Summing Up**—Although the in-

## BAROMETERS OF BUSINESS

| | LATEST PERIOD* | PRIOR WEEK | YEAR AGO |
|---|---|---|---|
| **INDUSTRY** | | | |
| Steel Ingot Production (1000 net tons)[2] | 2,103[1] | 2,033 | 415 |
| Electric Power Distributed (million kw-hr) | 12,500[1] | 12,200 | 10,800 |
| Bituminous Coal Output (1000 tons) | 7,750[1] | 1,500 | 7,145 |
| Petroleum Production (daily avg—1000 bbl) | 7,100[1] | 6,880 | 7,000 |
| Construction Volume (*ENR*—millions) | $400.6 | $386.3 | $391.3 |
| Auto, Truck Output, U. S., Canada (*Ward's*) | 151,189[1] | 148,551 | 144,000 |
| **TRADE** | | | |
| Freight Car Loadings (1000 cars) | 800[1] | 713 | 652 |
| Business Failures (Dun & Bradstreet) | 271 | 266 | 251 |
| Currency in Circulation (millions)[3] | $31,000 | $30,099 | $30,632 |
| Dept. Store Sales (changes from year ago)[3] | +3% | +5% | +2% |
| **FINANCE** | | | |
| Bank Clearings (Dun & Bradstreet, millions) | $21,204 | $22,291 | $22,396 |
| Federal Gross Debt (billions) | $272.5 | $272.8 | $272.9 |
| Bond Volume, NYSE (millions) | $15,578 | $19,245 | $17,827 |
| Stocks Sales, NYSE (thousands of shares) | 12,122 | 9,032 | 11,311 |
| Loans and Investments (billions)[4] | $87.0 | $87.6 | $84.9 |
| U. S. Govt. Obligations Held (billions)[4] | $25.6 | $26.0 | $26.3 |
| **PRICES** | | | |
| STEEL's Finished Steel Price Index[5] | 239.15 | 239.15 | 210.45 |
| STEEL's Nonferrous Metal Price Index[6] | 216.6 | 216.4 | 261.1 |
| All Commodities[7] | 118.0 | 118.0 | 114.1 |
| Commodities Other Than Farm & Foods[7] | 125.4 | 125.4 | 121.3 |

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

# ACME FLEXIBLE COUPLINGS

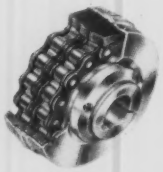


## have only 3 all steel units

Acme Flexible Couplings are used to connect two revolving shafts together and to compensate for angular and parallel misalignment. Acme precision, high capacity, flexible couplings are available in fractional to hundreds of horsepower ratings. They are simple to install and are available in both straight and convex rollers for varied applications.

- Easy to assemble
- All teeth hardened
- Soft hubs and bores
- Constant power transmission
- Positive yet flexible
- Minimum backlash
- Economical
- Durable
- Easy on and easy off

*Each Acme coupling is complete with standard keyways and set screws. Grease retaining felt and snap on cover if desired.*



Manufacturers of roller chains, cable chains, double pitch chains, sprockets, special attachments for conveyor chains.

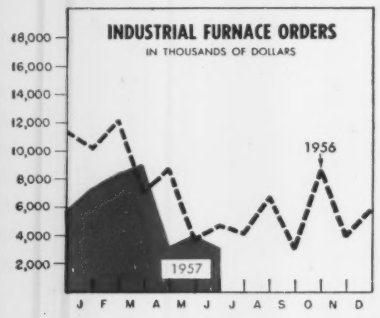
**WRITE FOR**

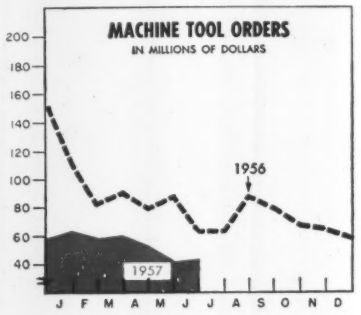
*Acme's latest 76 page catalog No. 10-N for complete Roller Chain Applications.*

**Call ACME for Service**

Acme Chain Corporation
HOLYOKE MASSACHUSETTS


## THE BUSINESS TREND




| | 1957 | 1956 | 1955 |
|---|---|---|---|
| Jan. | 7,380 | 10,244 | 4,973 |
| Feb. | 8,373 | 12,163 | 5,616 |
| Mar. | 9,090 | 7,025 | 7,345 |
| Apr. | 3,164 | 8,803 | 7,639 |
| May | 3,994 | 3,667 | 6,205 |
| June | 2,974 | 4,748 | 5,812 |
| July | .... | 4,140 | 4,338 |
| Aug. | .... | 6,722 | 6,273 |
| Sept. | .... | 3,057 | 8,351 |
| Oct. | .... | 8,741 | 9,575 |
| Nov. | .... | 3,986 | 6,180 |
| Dec. | .... | 5,858 | 11,105 |

*Not including new orders for steel mill furnaces.

Industrial Heating Equipment Assn. Inc.
Charts copyright, 1957, STEEL.

(Thousands of Dollars)

| | New Orders | | Shipments | |
|---|---|---|---|---|
| | 1957 | 1956 | 1957 | 1956 |
| Jan. | 63,250 | 109,550 | 76,550 | 54,600 |
| Feb. | 58,200 | 81,300 | 77,700 | 64,600 |
| Mar. | 58,900 | 89,500 | 89,100 | 74,150 |
| Apr. | 51,300 | 79,300 | 87,800 | 71,800 |
| May | 41,400 | 87,100 | 78,500 | 76,800 |
| June | 42,850* | 61,850 | 83,050 | 76,250 |
| July | ..... | 61,900 | ..... | 65,150 |
| Aug. | ..... | 87,500 | ..... | 75,100 |
| Sept. | ..... | 78,450 | ..... | 71,100 |
| Oct. | ..... | 66,100 | ..... | 89,750 |
| Nov. | ..... | 64,250 | ..... | 81,700 |
| Dec. | ..... | 57,200 | ..... | 85,150 |
| Totals | ..... | 924,000 | ..... | 886,150 |

*Preliminary.
National Machine Tool Builders' Assn.

dustrial side of the picture looks bright, John Q. Public views the situation with mixed emotions: Times are good, but his cost of living continues to skyrocket.

## Growth Follows Trend

The business community continued to grow in 1956 at about the rate of the long-term trend, reaching 4,301,000 as of Jan. 1, 1957. This meant an increase of about 50,000 firms, with practically all the growth concentrated in the first half, reports the Office of Business Economics in the July issue of *Survey of Current Business*. Despite the increase, manufacturing continued the decline that began in 1952. There were 307,000 such firms at the beginning of the year, compared with 308,700 at the beginning of 1956. All other major groups increased in number.

The trend so far in 1957 is for a slower growth in the business community. Through the first half, business failures were about 11 per cent ahead of the 1956 pace, while business incorporations were about 7 per cent under the year-ago period. But the growth is not likely to slip to the recent low of 10,000 for 1953-54 combined.

## Fabricated Steel Holds

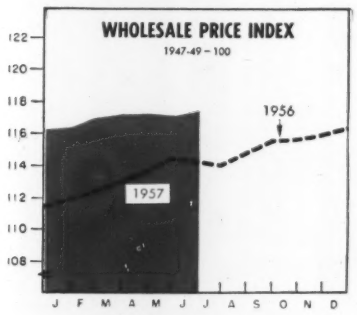
Shipments of fabricated structural steel totaled 329,256 tons in June, just under the record of 329,626 tons delivered to construction sites in May. This activity was 16 per cent above the June, 1956, mark and pulled the midyear aggregate to 1.8 million tons, 5 per cent above the first half, 1956, total.

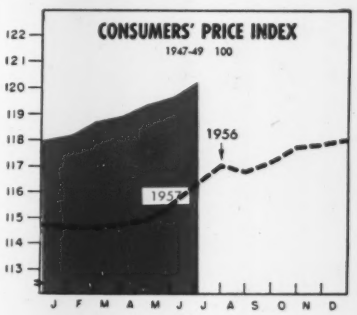
The backlog of new orders was 3.2 million tons on June 30, an increase of 13 per cent over last June's.

The American Institute of Steel Inc., estimates that 1.2 million tons will be fabricated during the the next four months.

## The Consumer Pays

When the Bureau of Labor Statistics announced that the consumer price index hit an all-time record of 120.2 in June (1947-1949 = 100), it represented the largest month-to-month gain since the same time last year (see chart, page 75). It also marked the




| | All Commodities 1957 | All Commodities 1956 | Other Than Farm & Foods 1957 | Other Than Farm & Foods 1956 |
|---|---|---|---|---|
| Jan. | 116.9 | 111.9 | 125.2 | 120.4 |
| Feb. | 117.0 | 112.4 | 125.5 | 120.6 |
| Mar. | 116.9 | 112.8 | 125.4 | 121.0 |
| Apr. | 117.2 | 113.6 | 125.4 | 121.6 |
| May | 117.1 | 114.4 | 125.2 | 121.7 |
| June | 117.4 | 114.2 | 125.2 | 121.5 |
| July | .... | 114.0 | .... | 121.4 |
| Aug. | .... | 114.7 | .... | 122.5 |
| Sept. | .... | 115.5 | .... | 123.1 |
| Oct. | .... | 115 6 | .... | 123.6 |
| Nov. | .... | 115.9 | .... | 124.2 |
| Dec. | .... | 116.2 | .... | 124.6 |

U.S. Bureau of Labor Statistics.

| | 1957 | 1956 | 1955 |
|---|---|---|---|
| Jan. | 118.2 | 114.6 | 114.3 |
| Feb. | 118.7 | 114.6 | 114.3 |
| Mar. | 118.9 | 114.7 | 114.3 |
| Apr. | 119.3 | 114.9 | 114.2 |
| May | 119.6 | 115.4 | 114.2 |
| June | 120.2 | 116.2 | 114.4 |
| July | .... | 117.0 | 114.7 |
| Aug. | .... | 116.8 | 114.5 |
| Sept. | .... | 117.1 | 114.9 |
| Oct. | .... | 117.7 | 114.9 |
| Nov. | .... | 117.8 | 115.0 |
| Dec. | .... | 118.0 | 114.7 |

U.S. Bureau of Labor Statistics.

**Wholesale Prices**

tenth consecutive month in which a record has been set. Since June, 1956, the cost of living has advanced 3.4 per cent.

Comparing this with the bureau's wholesale price index (see chart, above) and wage earners' spendable earnings, it appears that the consumer is being squeezed. The wholesale index has gone up only 2.8 per cent since June, 1956. It should be pointed out that part of the rise in the cost of living is seasonal—food prices usually go up in June. Some relief may come as the harvest rolls on, but the percentage relation with '56 will remain steady.

While wage earners are managing to increase their purchasing power, that ability is on the wane. The average pay envelope for a worker with three dependents yielded $75.13 in spendable earnings in June. This was up 68 cents over the May figure and $2.55 over that of the same month a year ago. But the index of "real" spendable earnings has advanced only fractionally from 120.9 to 121.0 (1947-1949 = 100) in that time. Wages are sure to get another hefty cost-of-living boost this summer, but that probably will do little more than cover rising prices.

## 2nd Quarter Sales Dip

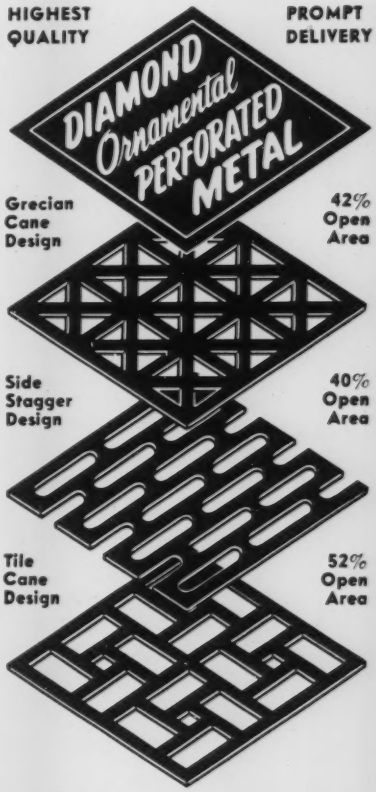
Sharon Steel Corp., Sharon, Pa., reports second quarter net sales of $37.8 million, compared with $50.5 million during the same period of 1956. Earnings were $1.1 million, or $1.03 per share this year, compared with $2 million, or $1.88 per share for the 1956 second quarter.

President Henry A. Roemer expects demand to increase in the fourth quarter with increased business from the automotive industry after 1958 models are introduced.

## Trends Fore and Aft

• Revenue freight loadings for the week ended July 20 totaled 743,359 cars, 14.6 per cent above those the same week last year but 4.9 per cent below those in the corresponding week in 1955.

• Domestic gas range shipments for the first half of 1957 totaled 970,600 units, down 10.9 per cent from the same period last year. Deliveries of free standing ranges amounted to 880,200 units, a drop of 13 per cent from the first half of 1956. Built-in ranges gained 16.5 per cent. A total of 90,400 units were shipped in the first half.


# Need Holes in Metal Sheets?

Several considerations must usually be observed. The design should be attractive in appearance, with adequate open area, while still, for some purposes, affording suitable concealment of what lies behind or underneath.

WHEREVER perforated metal is required, and it has thousands of applications today, you'll do well to contact DIAMOND. Forty years of widely diversified experience and hundreds of modern tool arrangements, enable us to give unsurpassed quality and delivery at competitive prices.

Catalog 39 shows many interesting applications and contains complete illustrated working data. No charge or obligation, but kindly state business connection.

**DIAMOND MANUFACTURING CO.**
WYOMING WILKES-BARRE AREA PENNA.

West Coast Plant, Diamond Perforated Metals Co.
17915 So. Figueroa St., Gardena, California
Los Angeles Area

# 6 SPEED NUTS® replace 10 fasteners ...and costs drop 80%!

Six Tinnerman SPEED NUTS replaced 10 weld nuts on the Gibson Window Air Conditioner... and production costs dropped more than 20 cents per unit!

Working with the designers at Gibson Refrigerator Company, Division of Hupp Corporation, Tinnerman engineers suggested using four "J" Type SPEED NUTS to fasten the front panel to the air conditioner cabinet. These one-piece, self-locking, spring-steel fasteners snap in place by hand; are self-retained in screw-receiving position. They also used two Flat Type SPEED NUTS to fasten the window mounting channel to the cabinet.

By eliminating ten weld nuts, Gibson was able to divert a spot welding machine to other uses, reduce materials handling, simplify and speed up assembly. They cut costs right down the line —without sacrifice of product quality!

Savings like this are being made every day when manufacturers switch from ordinary fasteners to Tinnerman SPEED NUT Brand Fasteners. Over 9000 variations are available to handle practically any fastening job, from tiny transistors to huge freight cars.

Send for complete data on how you can make important assembly-cost savings. And investigate the possibilities of having a Tinnerman Fastening Analysis made of your products. Call your Tinnerman representative, or write to:

**TINNERMAN PRODUCTS, INC.**
DEPT. 12 • P.O. BOX 6688 • CLEVELAND 1, OHIO

**TINNERMAN**
*Speed Nuts*®

FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bundy GmbH, Heidelberg.

SAM GURLEY JR.
*Olin Aluminum v. p.-sales*

JOHN H. GREENING
*Micromatic Hone chief eng.*

O. H. YOXSIMER
*Westinghouse plant manager*

L. B. LINDEMUTH JR.
*Keystone open hearth supt.*

**Sam Gurley Jr.** was appointed vice president-sales for **Olin Aluminum,** Olin Mathieson Chemical Corp., New York. He was vice president-sales at H. K. Porter Company Inc., Pittsburgh.

**Micromatic Hone Corp.,** Detroit, appointed **John H. Greening,** chief engineer; **Edward L. Behringer,** assistant chief engineer.

**Munro Corbin,** controller of **Rockwell Mfg. Co.,** Pittsburgh, since 1951, was elected vice president and assistant to the president. He is succeeded as controller by **John T. Farrell,** former assistant controller.

**Lowell Jensen** was made works manager at **Famco Machine Co.,** Kenosha, Wis. He was chief engineer.

**Harry A. Collins** was made production co-ordinator for fabricated products operations of **Blaw-Knox Co.,** Pittsburgh. **Arthur A. Levison** retired as vice president and sales co-ordinator-fabricated products.

**Douglas G. Eaton** was made sales manager of vacuum diecasting for **Reed - Prentice Corp.,** Worcester, Mass.

**Joseph F. Capoun** was elected president, **Columbia Burner Co.,** Toledo, O., to succeed the late **Adolph Schlett.** He continues as general manager and treasurer.

**A. W. Fraser** was made general marketing manager for **Worthington Corp.,** Harrison, N. J.

**O. H. Yoxsimer** was made manager of **Westinghouse Electric Corp.'s** East Springfield, Mass., appliance plant, responsible for all operations—including engineering, production and sales. He was manager of the refrigerator-freezer engineering department at the Columbus, O., plant. **J. R. Weaver,** manager of manufacturing and engineering since 1953, retired. **H. R. Bryant** was made administrative assistant to Mr. Yoxsimer. **H. F. Hildreth** was made assistant manager.

**David G. Kelton** was made an assistant general sales manager by **Cleveland Cap Screw Co.,** Cleveland. He succeeds **Thomas A. Fribley,** now secretary of the company.

**Henry P. Lockhart** was made assistant general manager of **Austin - Western,** construction equipment division, Baldwin-Lima-Hamilton Corp., Aurora, Ill.

**Tipp Mfg. Co.,** Tipp City, O., appointed **Roy E. Lynch** plant superintendent; **William J. Smith,** chief engineer.

**R. W. Munger** was named operating manager, foundry division, **Electric Auto-Lite Co.,** at Mt. Vernon, Ill. **R. M. Sellers** was made sales manager for the division.

**Carl O. Knierim** was appointed manager of heat treat sales for **Gas Machinery Co.,** Cleveland. He was chief engineer, industrial furnace division. **H. A. Anderson** was made chief project engineer.

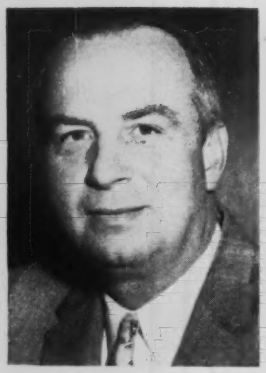
**L. B. Lindemuth Jr.** was appointed open hearth superintendent, **Keystone Steel & Wire Co.,** Peoria, Ill. He joined Keystone in 1955 as process control engineer. **A. R. Edwards,** open hearth superintendent since 1950, was made administrative and technical adviser.

**A. Dean Meyer** was made general manager, **Ajax Electrothermic Corp.,** Trenton, N. J., to succeed **Guilliam H. Clamer.** Mr. Meyer is also vice president. Dr. Clamer continues as president. **William J. Werts** was named plant manager. **Thomas J. Turner** was made buyer.

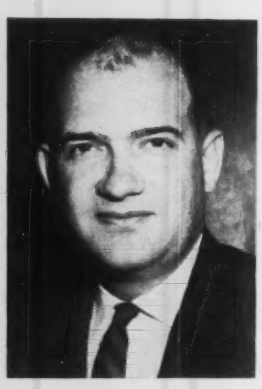
**SpeedWay Mfg. Division,** Thor Power Tool Co., Chicago, elected **J. B. Dempsey** vice president-marketing. He was manager of Thor's electric tool division. **G. R. Winkley** was made vice president, continuing as treasurer. **A. E. Feiereisel,** chief engineer and plant superintendent, was promoted to vice president-engineering.

**Emory L. Mainous** was named Dayton, O., division works manager for **Lau Blower Co.**

**Albert L. Hunt** and **Paul J. Bauman** were elected vice presidents of **National Bearing Division,** American Brake Shoe Co. Mr. Hunt is in charge of all manufacturing operations for division plants in St. Louis, Meadville, Pa., and Clearing (Chicago). He continues offices in St. Louis. Mr. Bauman, former general manager of the Meadville plant, now is responsible for the division's indus-



ROBERT L. STRAWBRIDGE



RUSSELL A. JOHNSON

*appointments at Wales-Strippit*

DOUGLAS R. BEGGS

FOSTER W. EVANS

*Carpenter Steel production posts*

trial sales. He continues offices in Pittsburgh.

**Robert L. Strawbridge** was made vice president and general manager, **Wales-Strippit Co.**, Akron, N. Y., a unit of Houdaille Industries Inc. **Russell A. Johnson** was made general sales manager.

**Metro P. Sirko** was named eastern regional sales manager, **Norden-Ketay Corp.** He is at Stamford, Conn.

**Darl F. Caris,** head of the research staff's automotive engine department, **General Motors Corp.,** was placed in charge of a newly created power development section which combines engineering and research sections dealing with automotive engines.

**A. B. Simmons** was made works manager at the Gainesville, Tex., plant of **National Supply Co.** He succeeds **H. E. Heywood Jr.,** transferred to Pittsburgh headquarters as a staff engineer in the manufacturing department.

**F. M. Jordan** joined **Heil Co.,** Milwaukee, as sales manager, heating and cooling division. He was general sales manager, Timken Silent Automatic Division, Scaife Co.

**Donald A. Hayes** was made chief metallurgist at **U.S. Steel Corp.'s** Gary, Ind., Steel Works. He succeeds **Harold B. Wishart,** assigned to the corporation's Chicago metallurgical office.

**Stanley J. Miller** was made assistant director, plant engineering division, **Joseph T. Ryerson & Son Inc.,** at Chicago.

**Carpenter Steel Co.,** Reading, Pa., appointed **Douglas R. Beggs** general superintendent of the Reading plant; **Foster W. Evans,** production manager. **Harold W. Miller,** who continues to head the engineering department, was assigned duties of co-ordinating all engineering functions, including electrical and mechanical maintenance.

**O. O. Royer** was made assistant general sales manager, **Parker Appliance Co.,** Cleveland. He was marketing manager.

**Electro-Alloys Division,** American Brake Shoe Co., New York, appointed **Claude E. Christie** and **William D. Raddatz** vice presidents. Mr. Christie is works manager, Elyria, O. Mr. Raddatz is sales manager of the division.

**International Business Machines Corp.** appointed **R. W. Little** purchasing agent for its time equipment division, Endicott, N. Y., plant; **Harry R. Taylor,** purchasing agent, electric typewriter division plant, Lexington, Ky.

**Kaiser Aluminum & Chemical Corp.,** Oakland, Calif., divided its aluminum operations into five major divisions. The new divisions and their general managers are: Metals, **Stanley B. White;** industrial, **John E. Menz;** electrical conductor, **J. T. Dugall;** products, **Howard C. Holmes;** overseas, **Ray G. Boyd.** Named to the new post of administrative manager is **Fred J. Drewes.** The divisional general managers are responsible to **T. J. Ready Jr.,** vice president and assistant general manager, in charge of all aluminum operations. **Jack W. Watson** succeeds Mr. Menz as general sales manager at Chicago.

**E. J. Mulcahey** was made product sales manager of **Rexon Vibration Mount Division,** Hamilton Kent Mfg. Co., Kent, O.

**Gay V. Land** was made vice president, oil department, **Climax Molybdenum Co.,** New York.

**Rheem Mfg. Co.,** Chicago, promoted **Will H. Roy,** a purchasing agent, to the new post of administrator of inventory management and internal control; **Kenneth H. Riha** to assistant to the director of purchasing.

**Burton J. Coler** was named an assistant sales manager at **Rolled Steel Corp.,** Skokie, Ill.

**Adrien F. Busick Jr.,** vice president-engineering, was promoted to executive vice president and general manager of **Marion Power Shovel Co.,** division of Universal Marion Corp., Marion, O. **David E. Rizor,** vice president, large machine sales, has retired and is succeeded by **Maurice V. Cornell. William R. LeMasters,** secretary-treasurer, was elected vice president.

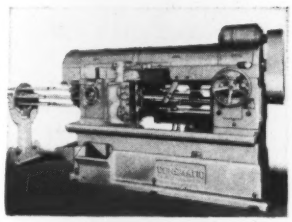
**John F. Kooistra** was named western regional manager, machinery and systems division, **Carrier Corp.,** with offices in Los Angeles.

**Alectra Division** of Consolidated Electrodynamics Corp., Pasadena, Calif., named **Willard T. Holmes** director of engineering; **Roy K. Stephens,** director of manufacturing.

**Robert L. Reed** was made Pitts-

If you haven't read this important booklet, your production line may be operating at less than peak efficiency. Your operations may be beating competition with HSS today, but you will likely need carbide tooling to be the leader tomorrow.

Write for your free copy of this important booklet today!



# Conomatic

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U. S. A.

RICHARD H. VALENTINE
*New Departure chief engineer*

STANLEY S. KRENTEL
*MacDermid exec. v. p.*

JOHN W. SLATTERY
*Crucible supervisor-stainless*

RAYMOND J. FORKEY
*Coppus Eng. president*

JACK W. KNOWLTON
*Martin-Decker div. sales mgr.*

HARVEY B. WILGUS
*Electric Products v. p.-sales*

burgh regional sales manager for **Electro Metallurgical Co.**, division of Union Carbide Corp.

**Raymond J. Forkey** was elected president, **Coppus Engineering Corp.**, Worcester, Mass. He succeeds **Jerome R. George Jr.**, now chairman. Mr. Forkey was vice president-manufacturing.

**Jack W. Knowlton** was made sales manager, Oiltool Division, **Martin-Decker Corp.**, Long Beach, Calif.

**L. T. Letsinger** was made works manager of **Aluminum Co. of America's** Davenport, Iowa, fabricating operations to succeed **E. B. Fassel**, now special assistant to the general manager of the fabricating division. Assistant works manager is **S. H. Bennett**, succeeding Mr. Letsinger.

**Clyde E. Claus** was appointed plant manager at Grand Rapids, Mich., for **Doehler-Jarvis Division**, National Lead Co. He succeeds **Robert H. Mayer**, resigned.

**Harvey B. Wilgus** was made vice president-sales, **Electric Products Co.**, Cleveland. He has been general sales manager since joining the company in September, 1955. Previously he was general sales manager of Redmond Co. Inc.

**Verne H. Feeney** was made purchasing agent, **Syncro Corp.**, Oxford, Mich. He was assistant purchasing agent for Gemer Mfg. Co. and had also held that post with Electro-Mechanical Products.

**George D. Billock**, vice president-treasurer, **Hubbard & Co.**, Pittsburgh, was named to the new post of vice president and assistant to the president. **Marshall S. Delavan** was elected vice president-treasurer.

**R. W. Lang** was made manager of **Westinghouse Electric Corp.'s** director systems department at Pittsburgh, succeeding **L. W. Golden**, named manager of the general purpose control department, motor and control division, Buffalo.

**Richard H. Valentine** was made chief engineer, **New Departure Division**, General Motors Corp., at Bristol, Conn. He succeeds **Seth H. Stoner** who recently was made general manager of the division. **Frederick J. Garbarino**, former director of quality control, fills the new post of director of sales and engineering. **Raymond O. Oyler** was made general sales manager; **Robert T. Collins**, director of quality control.

**Stanley S. Krentel** was elected executive vice president of **MacDermid Inc.** He was vice president of MacDermid Western, Ferndale, Mich., where he continues headquarters.

**John W. Slattery** was made general supervisor-stainless steel field sales, a new post at **Crucible Steel Co. of America**, Pittsburgh. He was midwest supervisor-stainless steel sales at Chicago.

## *OBITUARIES...*

**David A. Crawford**, 77, chairman, **Michiana Products Corp.**, Michigan City, Ind., died July 22 in Florida. He retired as president of Pullman Inc. in 1949.

**Frederick F. Hickey Sr.**, 65, a former president, **Savage Arms Corp.**, Utica, N. Y., died July 17.

**W. Dean Robinson**, 59, former president of **Briggs Mfg. Co.**, Detroit, died July 20.

**Edward J. Bothwell**, 56, head of distributor sales section, nickel sales department, **International Nickel Co. Inc.**, New York, died July 24.

**Gardner J. Mortenson**, 69, retired president, **Mortenson Steel Corp.**, San Diego, Calif., died July 23.

**C. F. Wahl**, 67, retired chief metallurgist, **Pratt & Letchworth**, Buffalo, died July 22.

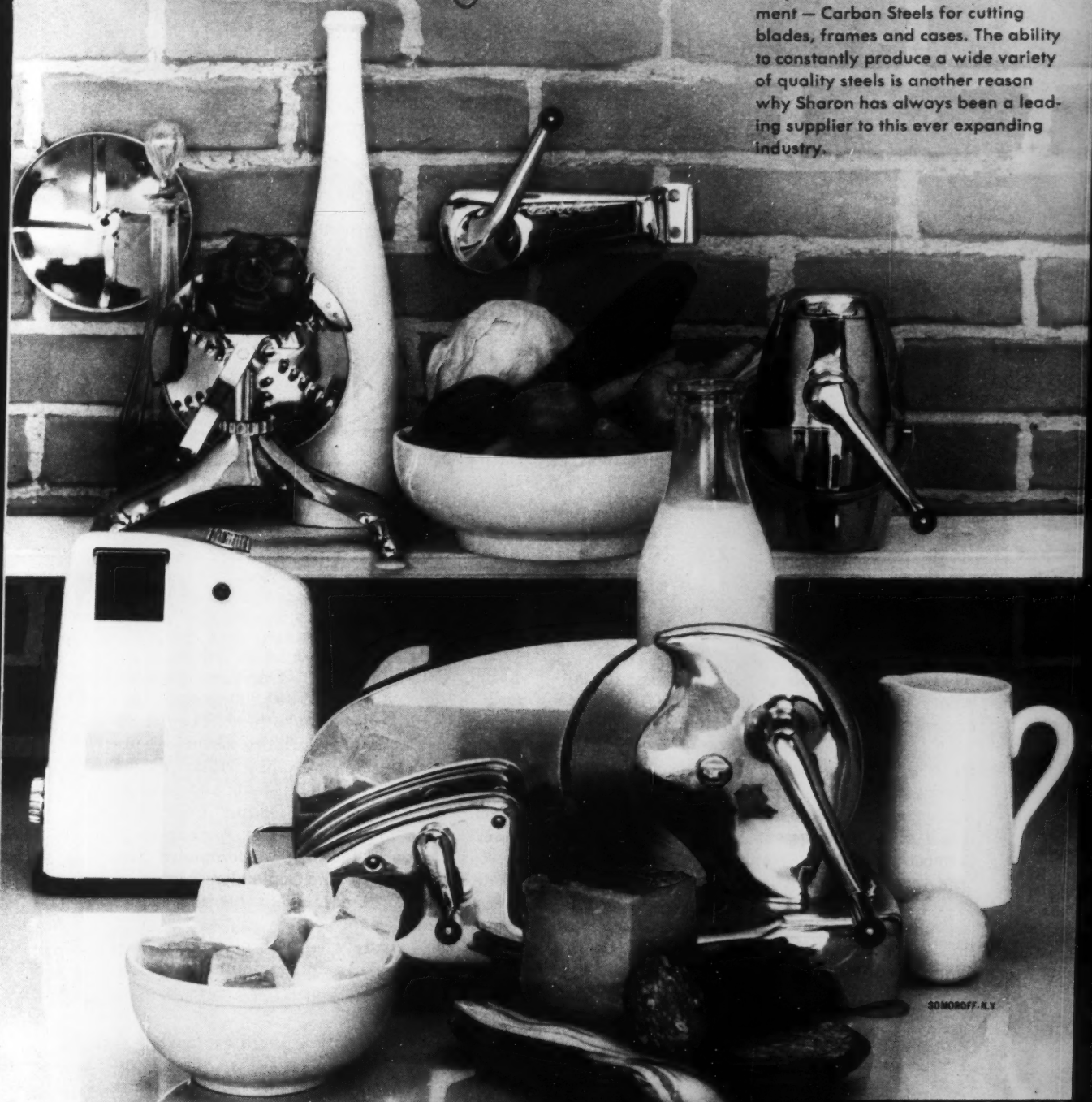
**Robert E. Doyle**, 50, Detroit district sales manager, steel and tube division, **Republic Steel Corp.**, died July 21.

**Walter Donnelly**, 56, works plant manager, **Tomkins-Johnson Co.**, Jackson, Mich., died July 7.

## IN KITCHEN ACCESSORIES, TOO

# Sharonsteel Quality STANDS OUT

• Many different types of steel are required in the manufacture of kitchen accessories. — Stainless Steels for trim and assemblies that come in contact with foods — Alloy Steels for parts that must absorb punishment — Carbon Steels for cutting blades, frames and cases. The ability to constantly produce a wide variety of quality steels is another reason why Sharon has always been a leading supplier to this ever expanding industry.

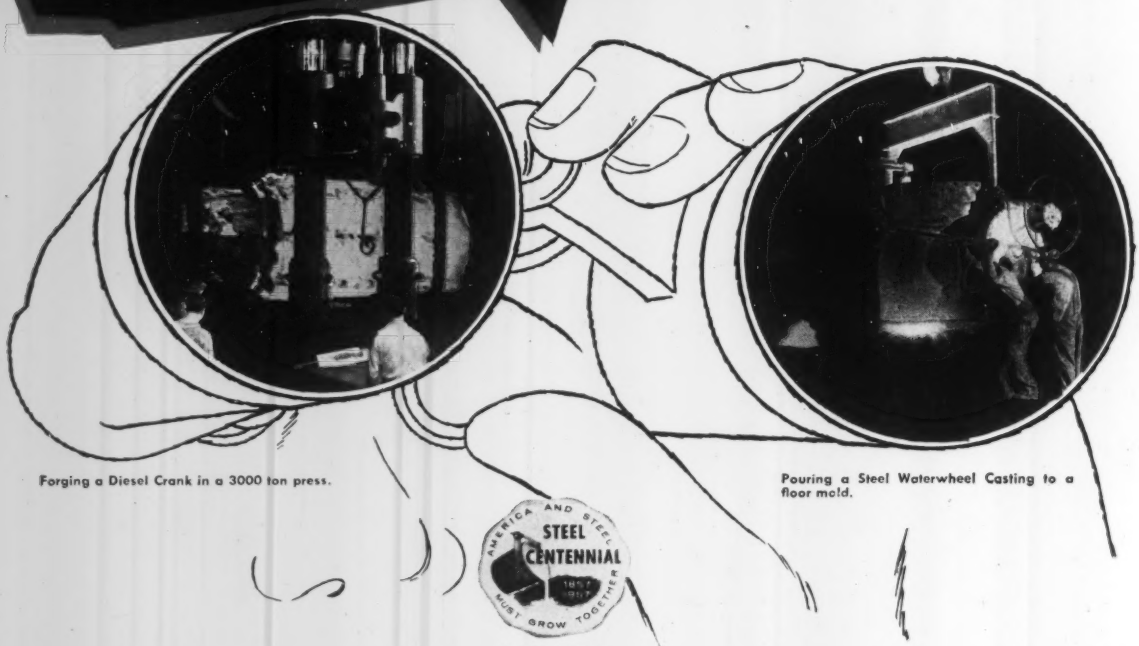



**SHARONSTEEL** *For 56 Years a Quality Name in Steel*

SHARON STEEL CORPORATION, SHARON, PENNA.

CHICAGO, CINCINNATI, CLEVELAND, DAYTON, DETROIT, GRAND RAPIDS, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, NEW YORK, PHILADELPHIA, ROCHESTER, SAN FRANCISCO, SHARON, SEATTLE, MONTREAL, TORONTO

# TAKE A CLOSER LOOK AT ERIE FORGE & STEEL CORPORATION



Forging a Diesel Crank in a 3000 ton press.

Pouring a Steel Waterwheel Casting to a floor mold.

AMERICA AND STEEL — STEEL CENTENNIAL — 1857 1957 — MUST GROW TOGETHER

For 85 of Steel's 100 years.

**STEEL FORGINGS . . .** Ingots up to 90 inches in diameter weighing 200,000 pounds are forged on presses ranging from 1500 to 3000 tons here. The steel is made here. Heat treating and machining are completed here. The finished product on shipping dock may be a giant turbine rotor shaft, the world's largest diesel crank, a ship's drive shaft, an engine connecting rod, or a component for an industrial machine . . . or any one of a thousand industrial forgings. From engineering design, metallurgical quality control, production to finished product, it's done under "One Responsibility and One Control."

**STEEL CASTINGS . . .** One piece castings from a few pounds to 300,000 pounds are poured from steel we make here. They show up as components for Hydro-Electric Turbines, Steam Hammers, Rolling Mills, Cement Mills, Steam Turbines, Crushers, and as components for the world's leading makers of industrial production machines. Assemblies of steel castings and forgings are completed here for electric furnaces, ships' unloaders, hydraulic presses, transport equipment bearing names you know at a glance.

You can be *sure* when you place your steel forging, ingot and casting requirements with us.

**ERIE FORGE & STEEL CORPORATION**

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE

ERIE FORGE & STEEL CORPORATION

# Builds New Mills

**U.S. Steel starts two-year project to modernize rolling facilities at Duquesne Works**

THREE high-speed rolling mills will replace present facilities for the production of billets, blooms and slabs at United States Steel Corp.'s Duquesne Works, Duquesne, Pa. Construction will start in about three months.

The mills will be in a building to be erected between the Monongahela river and the bar mills at Duquesne. They will consist of a 46-in. high lift, slabbing-blooming mill; a 36-in. blooming mill; and a 4-stand, continuous, 21-in. billet mill consisting of two vertical and two horizontal stands. Each rolling mill will be fully automatic, having its own shears and mill outlets, including facilities to handle the finished product.

**Auxiliary Projects** — The program also provides for the installation of seven banks of soaking pits, a new stripper building and a new 90 x 864 ft shipping building.

Construction will take over two years to complete. Another year will be required to dismantle the present 40-in. mill, the 38-in. mill and the 8-stand, 14-in. mill.

Harvey B. Jordan, executive vice president-operations, says: "Construction of the new mills will be another big step forward in Duquesne's modernization program which will assure the continuance of the plant's position as a leader in serving the expanding specialized markets for high quality carbon, alloy and stainless steel bars."

## Opens Tool Steel Warehouse

Allegheny Ludlum Steel Corp., Pittsburgh, opened a tool, die and high-speed steel warehouse at 155 Washington St., Newark, N. J.

## Expands Refractory Plant

H. K. Porter Company Inc.'s Refractories Division will install additional manufacturing facilities at its Canon City, Colo., plant. Productive capacity will be increased by more than 50 per cent. A contract has been signed with the Stearns-Rogers Mfg. Co., Denver, for equipment to manufacture low-alumina silica roof brick by the wet grinding process.

## Koppers Gets Republic Work

Koppers Co. Inc., Pittsburgh, has been awarded a contract to rebuild two coke oven batteries and to furnish chemical recovery and coke handling equipment at Republic Steel Corp.'s Cleveland Works. Each of the 51-oven batteries will be able to carbonize 1000 net tons of coal daily, producing 700 net tons of furnace coke. Koppers is rebuilding another 51-oven battery at the same works. It'll be placed in operation within the next few months.

## Norton Builds Another Plant

Norton Co., Worcester, Mass., is building a $6.5-million plant to increase production of bonded grinding wheels. It is scheduled to be completed by mid-1959. The firm also is building a $1.5-million refractories plant, a $2-million central service building and a $1-million abrasive supply structure.

## Beckman Adds Systems Division

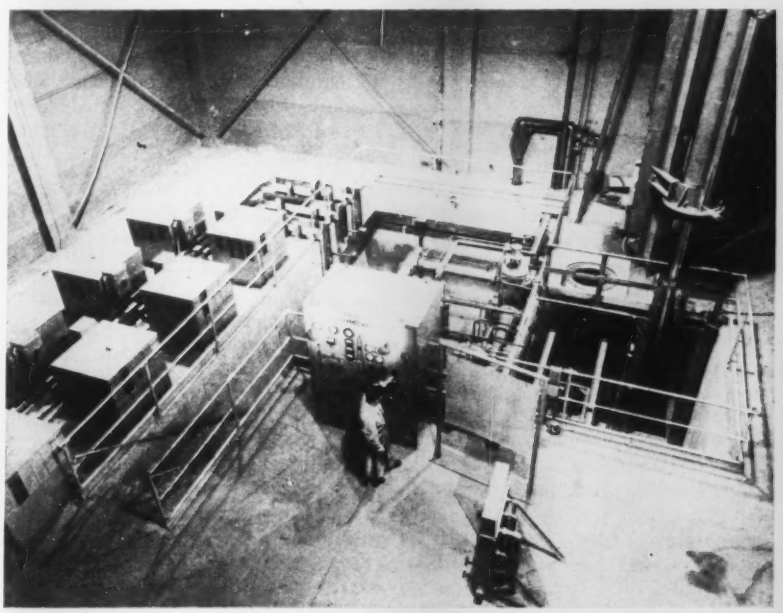
Beckman Instruments Inc., Fullerton, Calif., will form a Systems Division to handle engineering and marketing programs. Heading the new division will be John F. Bishop.

## To Build Warehouse in Texas

McCormick Steel Co., Houston, will build a $200,000 warehouse and office building in Corpus Christi, Tex. Robert R. Huffman will head the new operation.

## Opens Seattle Steel Warehouse

Summerville Steel Co., newly established steel products distributor, will open a warehouse at 1061 Sixth Ave. S., Seattle, Wash., on Aug. 1. It will stock seamless and welded steel tubing, cold finished bars and tool and alloy steels. Officers are Clyde Summerville, pres-



## Universal Activates Vacuum Arc Furnace

A new vacuum arc melting furnace is being used to melt molybdenum and molybdenum alloys at Universal Cyclops Steel Corp.'s plant at Bridgeville, Pa. It also can be used for iron or nickel-base alloys, titanium and zirconium. Capacity: Ingots 16 in. in diameter, 66 in. long. Steel ingots weigh about 3500 lb; molybdenum, 5000 lb. The furnace was built by General Electric Co. At left above, are ten selenium rectifiers, producing a power supply of 15,400 amperes. The vertical cylinder (right, rear) is the electrode housing in melting position. The electrode is lowered into a water-cooled crucible as it melts. Protruding from the pit (to right of furnace) is an electrode ready for the next melt

ident; Jack Toland, vice president; and Earl Anderson, secretary.

### Will Erect Houston Warehouse

Metal Goods Corp., St. Louis, distributor of aluminum, brass, copper, nickel and steel products, will erect a $1-million warehouse at Houston next year.

### Firm Centralizes After Merger

Weller Electric Corp., Easton, Pa., will centralize production, sales and administrative operations in Easton. Facilities will be erected later this year.

Weller Mfg. Co. and Weller Sales Co. merged into Weller Electric Corp., with Carl Weller as president. The firm makes soldering guns and power tools.

### Forms Custom Valve Division

Hydraulic Accessories Corp., Van Dyke, Mich., formed a division to handle its output of custom hydraulic valves for aircraft, industry and agriculture. The firm will increase production of standard valves.

### Toolmaker Enters Electronics

Wiesner-Rapp Co. Inc., Buffalo, machine tool manufacturer, established an Electronics Division. The company has been working on a device that uses magnetic tape to operate machine tools by remote control.

### Westinghouse Still Expanding

Westinghouse Electric Corp., Pittsburgh, continues to broaden its expansion program. 1. It will build a manufacturing and repair plant in Charlotte, N. C. 2. Enlarge its Cheswick, Pa., facilities for the manufacture of core components and the completion of core assemblies for nuclear reactors. 3. Build an addition to its air conditioning division plant at Staunton, Va.

The 24,000 sq-ft Charlotte building should be completed in mid-1958 and will be equipped to build and service electrical apparatus. The addition of 24,000 sq ft of manufacturing space at Cheswick is the second phase of the company's multimillion dollar, two-year project which began in late 1955. The new building at Staunton will provide an additional 87,000 sq ft of space which will be devoted primarily to warehousing and light manufacturing.

## CONSOLIDATIONS

**Southington Hardware Mfg. Co.**, Southington, Conn., will merge with **Pittsburgh Screw & Bolt Corp.**, Pittsburgh. The Southington firm makes wood, sheet metal and machine screws and other special fasteners in diameters up to ⅜-in. Materials include steel, stainless steel, brass, bronze and aluminum.

**Thor Power Tool Co.**, Chicago, acquired **Drying Systems Inc.**, that city, producer of industrial ovens, process air conditioning installations, and electronic controls.

**Union Tank Car Co.**, Chicago, will acquire **Phoenix Mfg. Co.**, Joliet, Ill., subject to approval of stockholders. The transaction will include Phoenix Mfg.'s subsidiary, **Graver Tank & Mfg. Co.**, East Chicago, Ind.

## ASSOCIATIONS

T. W. Ernst, Trane Co., La Crosse, Wis., has been named president of the **Heating & Cooling Coil Manufacturers Association**, Detroit.

Representatives of five foundries established a trade organization, the **Aircraft Castings Association.** Its chief aim is to promote "the expanded use of ferrous castings in the aircraft and missile industries." Charter members are: Electric Steel Foundry Co., Portland, Oreg.; Hanford Foundry Co., San Bernardino, Calif.; Pacific Alloy Engineering Corp., El Cajon, Calif.; Stanley Foundries Inc., Huntington Park, Calif.; Lebanon Steel Foundry, Lebanon, Pa.; High Integrity Cast Alloys Inc., Shreveport, La. The group may be contacted through Donald A. Slichter, Pacific Alloy Engineering Corp., 400 N. Richfield Ave., El Cajon, Calif.

## REPRESENTATIVES

Bethlehem Supply Co., a subsidiary of Bethlehem Steel Co., Bethlehem, Pa., has been named a distributor of oil field casing and tubing manufactured by **Lone Star Steel Co.**, Dallas. While Bethlehem Supply will begin receiving small shipments of oil country goods in the near future, allocations may not become sizable until Lone Star's new stretch reducing mill and fifth open-hearth furnace are completed and in operation. Walter T. Moreland, vice president-sales for Lone Star, says increased production was the principal reason for adding another distributor.

**Harvey Aluminum**, Torrance, Calif., appointed Standard Metals Corp., Los Angeles, distributor of its products.

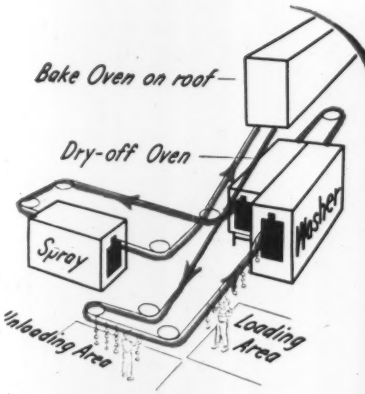
**Miami Industries Inc.**, Piqua, O., maker of electric welded tubing, appointed Perry McAllister, Western Springs, Ill., as its representative for northern Illinois, Iowa and Wisconsin.

## NEW ADDRESSES

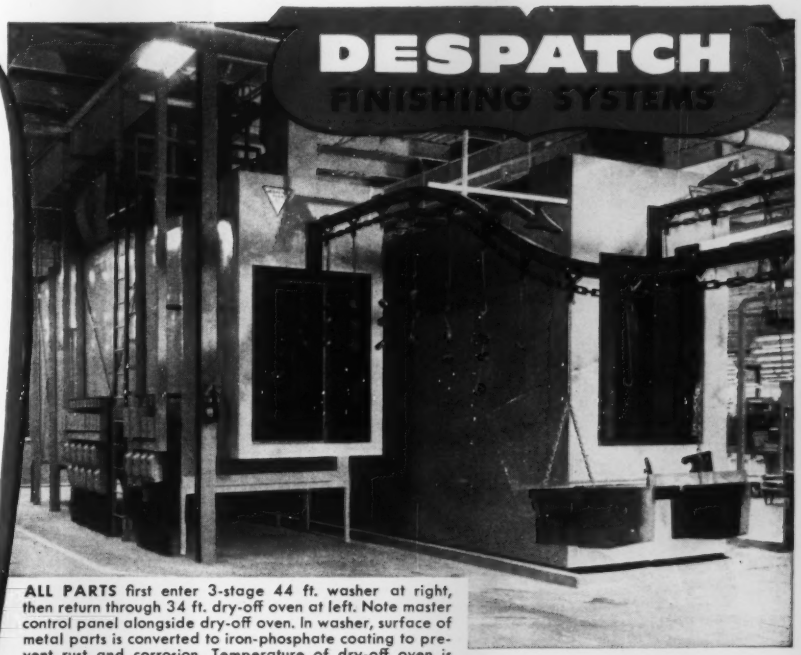
**United Die & Engraving Co.** moved to enlarged quarters at 4701 W. Electric Ave., West Milwaukee, Wis.

As of Aug. 1, the general sales administration of **Reading Anthracite Co.** will move from Philadelphia to 400 Park Ave., New York 22, N. Y. The new quarters also will accommodate the New York district sales office, which will vacate its present offices at 140 Cedar St., New York 6, N. Y. The Philadelphia-southern district office will remain at 725 Reading Terminal, Philadelphia 5, Pa.

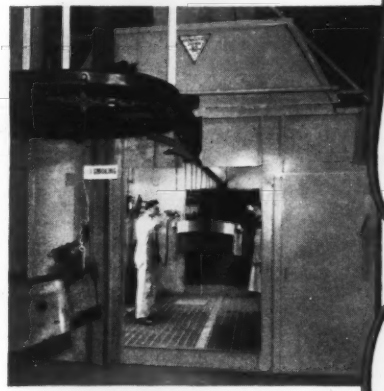
**Burroughs Corp.'s Electro-Data Division** moved its Los Angeles district office to 230 N. Lake Ave., Pasadena, Calif. Electro-Data's main plant is at 460 Sierra Madre Villa, Pasadena.




**FLOW DIAGRAM** shows perspective (not actual scale) of new metal processing and paint finishing system in Tennant's new plant. Conveyor is 500 ft. long. The 74 ft. bake oven is built on the plant's roof to save floor space. Just-sprayed parts travel up and into the oven through its underside opening. Baking lasts eight minutes at 330° F.




**ALL PARTS** first enter 3-stage 44 ft. washer at right, then return through 34 ft. dry-off oven at left. Note master control panel alongside dry-off oven. In washer, surface of metal parts is converted to iron-phosphate coating to prevent rust and corrosion. Temperature of dry-off oven is varied from 350 to 400° F., depending on size of parts.



**CONVEYOR SPEED** of 8 ft. per minute gives sprayers time to handle basket loads of small parts or large frames such as shown in photo. After prime coat is sprayed and baked on, parts go through system again (washer is temporarily shut off) for spraying and baking of the finish coat.

New 2-Tone Tennant Model "80" Sweeper

**74 DIFFERENT PARTS,** each twice sprayed and baked, are in this new Tennant Model "80" power sweeper for industrial use. The "80" goes anywhere, gobbling up dirt, debris, dust and litter. It features optimum design for most plants; will clean 19 out of 20 plant aisles in not more than two passes!

## *From 80 man-hours to 24...*

# FASTER, BRIGHTER PAINTING OF 1000 DIFFERENT PARTS!

The G. H. Tennant Company, Minneapolis, used to have trouble painting production quantities of 1000 different metal parts for their power sweepers, floor machines, scarifiers, roof scrapers and concrete routers.

This new DESPATCH continuous-conveyor finishing system speeds washing and drying of *all* parts (they weigh from ounces to 800 pounds) and speeds spraying and baking of the prime coat and the bright orange or cream finish coat.

The system enables Tennant to do in 24 man-hours what used to take 80 man-hours, and assures a superior finish.

The entire system was engineered, built and installed by DESPATCH in cooperation with the Tennant Company. DESPATCH can help you. There's a DESPATCH-trained resident engineer near you. Why not talk to him about your finishing requirements?

## *Write today for Bulletin 51K*

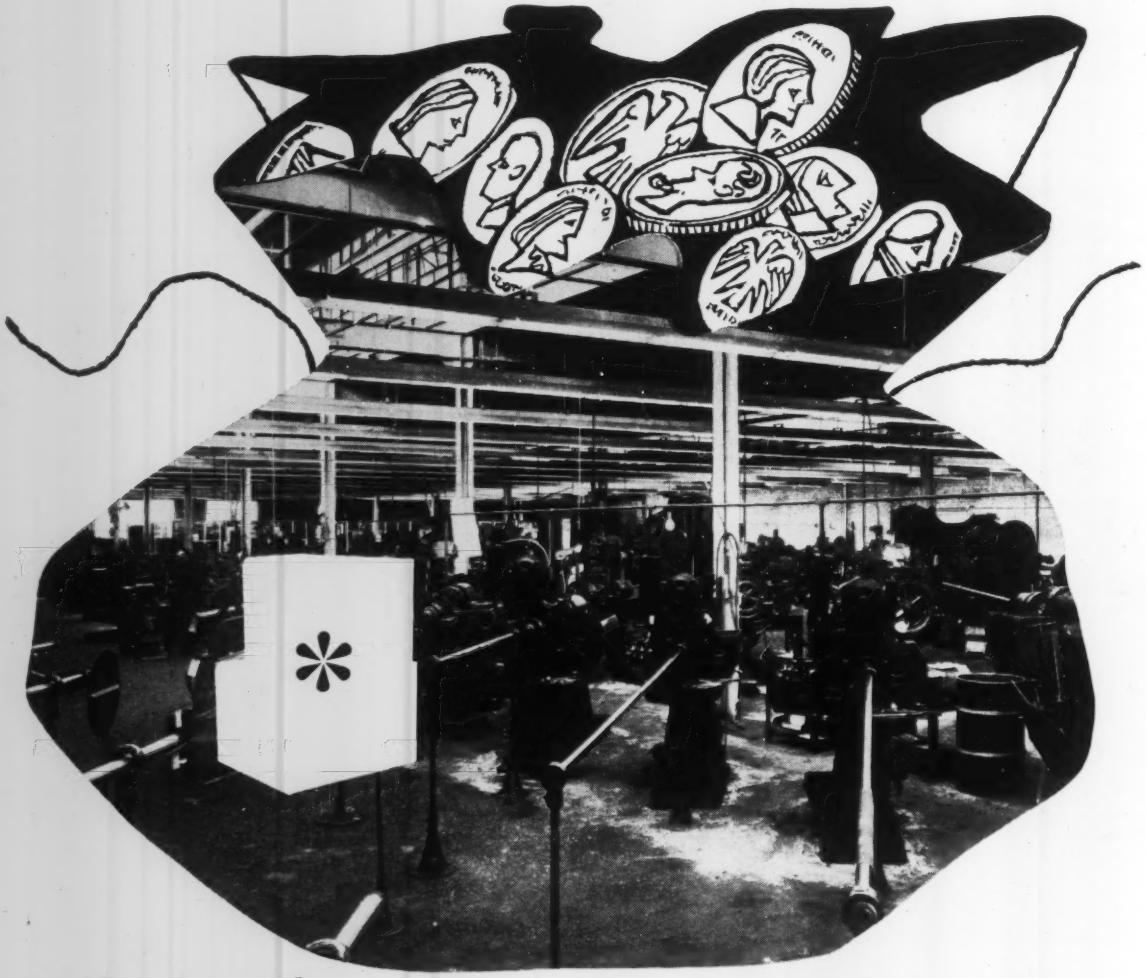
16 colorful pages on modern ways to achieve better finishes, faster production and smoother handling of metal products . . . at lower cost.

**DESPATCH OVEN COMPANY**

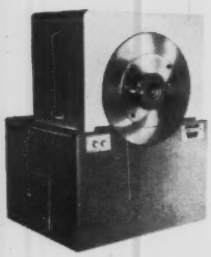
**619 S.E. Eighth Street Minneapolis 14, Minn.**

*Sales and Service in All 26 Principal Cities*

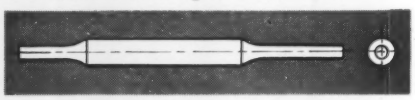
**PIONEERS IN ENGINEERING FINISHING SYSTEMS FOR INDUSTRY**



# How much are you paying for the machine that isn't there?



Because a Torrington Rotary Swaging Machine shapes work by reduction instead of cutting metal away, many parts you are now machining can be *swaged* in less time, using less material.



Take this steel shaft, originally produced by turning. By using a smaller blank and *swaging* both ends (in 9 seconds), a 37% material saving was realized. Accuracy to ±.001" was secured with unskilled labor!

You can put many operations on a Torrington Swager—pointing, tapering, reducing, sizing, forming inside contours and threads. In a short time, your swaging machine will have paid for itself. If you operate screw machines you cannot afford to be without a Torrington Rotary Swaging Machine.

See for yourself what swaging is and what it can do. Let us show you our new, 20-minute, full-color film on swaging. And write for our catalog on Torrington Rotary Swaging Machines now.

THE TORRINGTON COMPANY • Swager Department
150 North Street, Torrington, Conn.

## TORRINGTON ROTARY SWAGING MACHINES

# Technical Outlook

**PLASTIC COATED STEEL—** Look for more applications of this material, especially in automotive and architectural fields. U.S. Steel is trying out vinyl coated sheets on the exterior of a maintenance building and on parts of a central machine building at the corporation's sintering plant under construction near Saxonburg, Pa. The vinyl coating is applied to galvanized sheets—a variety of colors and thicknesses is being used to see how each holds up under weathering. The sheets are being made on an experimental basis at U.S. Steel's Irvin Works.

**DIECAST V-8 OUTBOARD—** Diecast motor blocks are closer for outboards than they are for autos. A large Wisconsin outboard motor builder is developing a V-8 with an aluminum block that will turn up 85 hp. Some of the tooling is in Detroit die shops now. (For more developments in diecasting, see page 89.)

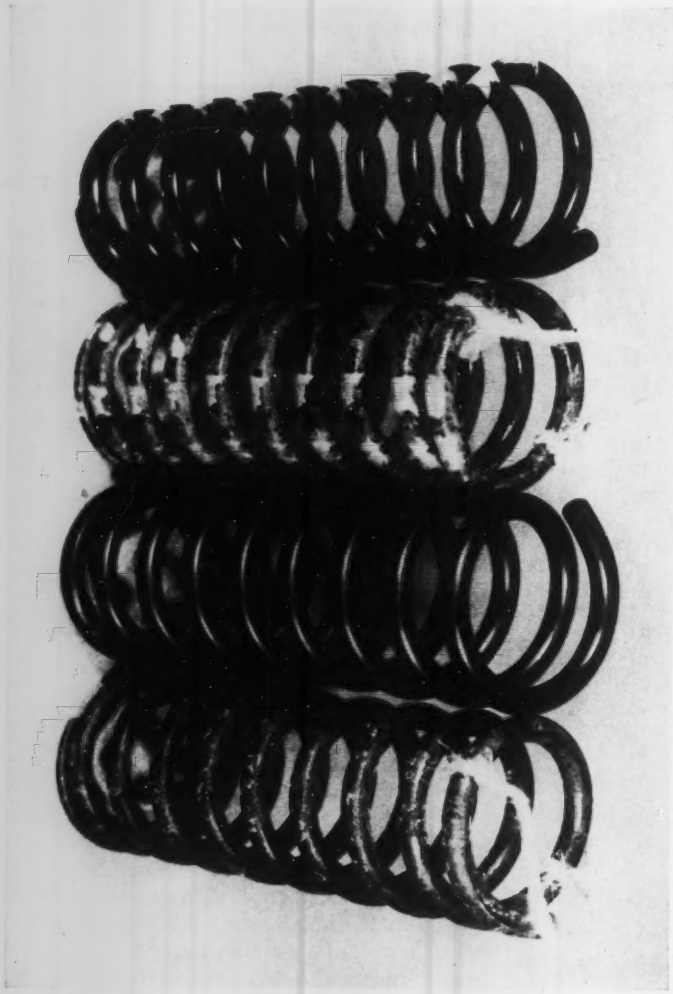
**FELTED FIBERS—** A new porous metal sheet material is made of felted metal fibers. Porosities can be varied over a wide range. Uses might include high temperature filters for aircraft engines, a honeycomb structure to fill tail and rudder sections and a porous material for transpiration cooling systems. Where the fibers have been used as reinforcement in plastics and ceramics, they have provided a high elastic modulus and avoided problems of abrasion.

**HEAT RESISTANT COATINGS—** Makers of heating appliances can use aluminum coated steel parts for service up to 1030°F, says the American Gas Association. The decision was based on test units fabricated from Armco aluminized steel Type 1. This raises the temperature level about 200°F over carbon steel and permits the design of smaller heating units with no reduction in Btu. Other conclusions from the lengthy investigation: 1. Steel is protected by the aluminum coating up to 1200°F, with or without sulphur in the gases. 2. The coating protected even after it was intentionally damaged. 3. Welding had no harmful effects.

**TESTING REACTOR—** Outside Pittsburgh, Westinghouse has broken ground on a site for a full-scale testing reactor. Known as WTR, it will operate in the 20,000-kilowatt range and will be used to test materials under conditions similar to those in a power reactor.

**SANDWICH WELDER—** A method developed by the Linde Co., a division of Union Carbide Corp., New York, joins spaced sheets like those in an auto radiator. It uses standard sigma spot-welding and requires little preparation. An arc melts a hole through the top sheet. Molten metal fuses to the lower sheet. A column of metal builds up until it fills the hole and fuses with the top sheet. Weld nuggets act as spacers —they double rigidity, increase bursting strength. Each requires less than 4 seconds to make.

**MORE FROM TAR—** Koppers has opened a new plant at Arroyo, W. Va., which will concentrate on producing and finding applications for high boiling fractions of coal tar which have not been made commercially. R. R. Holmes, vice president and general manager of the Tar Products Division, says: "Of the more than 200 compounds in coal tar, only six or eight have found any extensive use." One of Koppers' products will be Niacin, a vitamin B complex used as a nutritive supplement. The plant is within 100 miles of half the tar production in the U.S., the company says.



These springs were subjected to a 20 per cent salt spray for 24 hours. Before and after shots show how the paint held up. Two springs on top have regular coatings. Two on bottom are emulsion coated

# Water Paint for Metal Parts

## Fire-safe product has durability of thinner-based paints, is quick drying and nonvolatile. Location of mixing operations and finishing stations is no longer a problem

PAINTS that do not contain inflammable thinners are being used to coat automotive parts at the Dearborn plant of Ford Motor Co.

One of the main advantages of these water emulsion coatings is that they eliminate fire hazards. The same property allows a substantial reduction in application and curing equipment. Mixing operations and finishing stations may be placed at any convenient location in the plant.

"The new nonsolvent paint is an important milestone in the automobile industry since it contributes to safer employee working conditions," says D. J. Davis, vice president of manufacturing at Ford.

Here are some more advantages of the new paint:

- Its corrosion resistance can be built into the binder material.
- Its evaporation losses are low.
- It has good adhesion to metal, and some types have improved drying characteristics.
- It provides more film coverage per gallon since it can be applied at high solid concentrations.
- It provides the correct film thickness with less paint.

**How It's Made**—Inflammable thinners are eliminated by suspending particles of pigment in water to form an emulsion. This eliminates dissolving the pigment in volatile thinner.

The emulsion is a mixture of a binding material with the necessary pigments and colloids, or dispersing agents. The emulsified binder is an intimate mixture of a water-in-soluble oil, resin or latex component and the water component or carrying medium.

Emulsifying agents, antifoaming ingredients and other additives are brought together in proper balance with the binder and water vehicle to produce the finished emulsion coating.

Extensive research was required to perfect a product with exterior durability and adaptability to high volume production.

**Suppliers**—Glidden Co., Cleveland, is typical of suppliers who developed the new product. A. D. Duncan, Glidden vice president and general manager of the paint division, points out: "A principal advantage inherent in an emulsion coating is that it can be 'tailor made'—formulated and marketed to achieve specific end results as required by the consumer."

**Look Ahead** — Research efforts are being concentrated on better finish coat properties. Mr. Duncan stated: "Glidden foresees when appliance manufacturers and other metal fabricators will use emulsion as finish coats for their products."

# Look to Aluminum Diecastings when parts must be . . .

ARE YOU using more diecastings? Many companies are; accompanying illustrations suggest why.

Aluminum diecasting is highlighted in this article because of its amazing growth. In 1946, its volume was less than half that of sand or permanent mold aluminum casting. In 1952, it passed sand casting and in 1953 permanent mold. This year's production bids to exceed 4 million lb and equal total output of both methods.

**Reasons for Growth** — Higher labor costs (in assembling and machining) have sparked the increasing use of aluminum diecastings. Aluminum Co. of America, Pittsburgh, points out that they are being used for many structural parts. Just a few years ago, they were used mostly as shrouds or covers.

Quality and soundness have been greatly improved by higher locking and injection pressures. The strength and pressure resistance of diecastings are provided by their dense outside skin. High pressures increase the density and thickness of this outside layer.

Ten years ago, only big machines had locking pressures of 250 tons; today, such pressures are used only on small machines. Injection pressures of 5000 psi are common. In some cases, they have reached 20,000 psi, says Alfred F. Bauer, assistant general manager and chief engineer, Doehler-Jarvis Division, National Lead Co., Toledo, O.

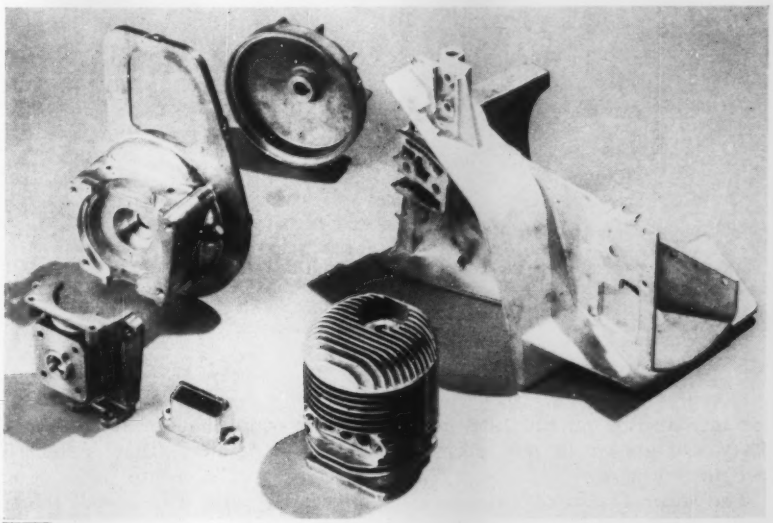
**Huge Machines**—At least three companies have made diecasting machines with capacities in excess of 1200 tons. Demand for these machines was set off when the automotive industry switched to aluminum diecastings for torque converter housings.

Doehler-Jarvis' biggest machine has a locking pressure of 2000 tons and can cast aluminum parts weighing up to 75 lb. The company says it can cast V-8 engine blocks in addition to the 6-cylinder block produced experimentally.

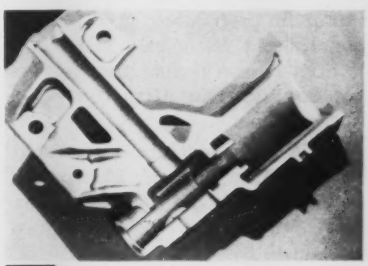
**V-8 Block**—Mr. Bauer states interest in the diecast block has never been as strong as now. Engineering problems are solved and design is in the cost analysis stage. He predicts it will be at least three to four years before the first diecast V-8 engine blocks appear.

One auto maker is rumored to be ordering six 2500-ton machines for a diecasting plant to be located adjacent to a hot metal source for aluminum. It will be ready in 1959.

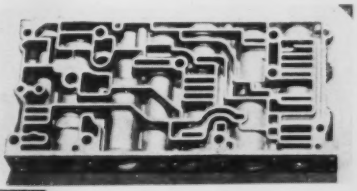
**More Predictions**—Diecast aluminum wheels (with gray iron brakedrum inserts) are scheduled



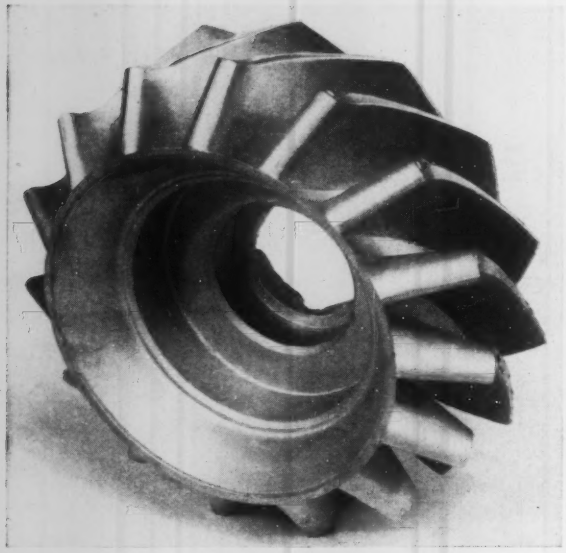
**1** **LIGHT AND STRONG** . . . These castings add strength and lightness to a portable chain saw made by Porter-Cable Machine Co., Syracuse, N. Y.



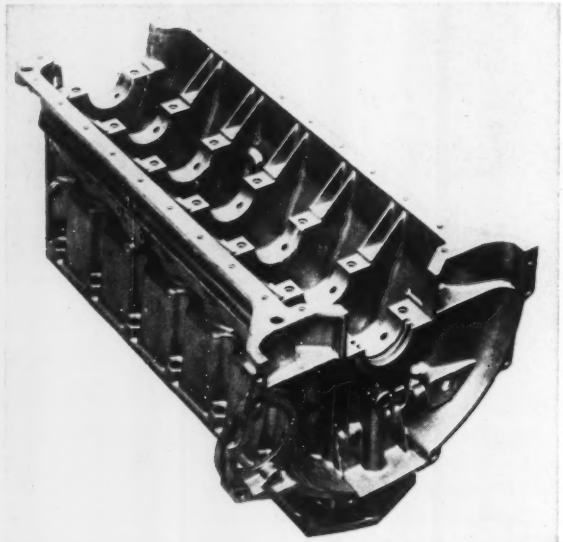
**2** **PRESSURE TIGHT** . . . High density on this 5-lb steering housing is achieved by use of a shot control system and injection pressures of 6500 psi. Casting withstands 1100 psi internal pressure and high stress loads



**3** **INTRICATE** . . . Better alloys and diecasting dies (and the use of intersecting cores) make the diecasting of this 2½-lb valve body possible



**4** **COMPLEX . . .** This is a diecasting. Special dies make it easy to produce the complex curves and undercuts on this part for automatic transmissions



**5** **BIG . . .** This six-cylinder engine block weighs 43 lb. All 147 holes are cored. Problems on V-8 blocks are solved; diecast blocks may appear in 1961 cars

for introduction on the 1958 cars. They will appear in one, perhaps two, luxury jobs.

The inner frame of auto doors may be a diecasting on some of the 1959 models.

**Big Possibilities**—The introduction of vacuum diecasting of aluminum promises to give an additional boost to sales. One substantial reason is that the castings can be given an attractively anodized finish.

David Morgenstern, president, Nelmor Mfg. Corp., Euclid, O., (developer of the patented Vacucast process and builder of conversion equipment for existing machines), predicts that anodized castings will decorate 1960 cars. Presently, parts with a wall thickness of 0.090 in. can be anodized. Reduction of the thickness to 0.060 in. appears promising, he says.

The potential includes automotive hardware (such as grilles and trim), appliances, office furniture and household goods.

Opinion is divided on the extent vacuum diecasting will supplant conventional methods. Douglas Eaton, sales manager, Vacucast Division, Reed-Prentice Corp., Worcester, Mass., believes all aluminum castings can be made better or faster with vacuum. (His firm is the exclusive builder of machines using the Nelmor process.)

Others believe the system will extend the range of jobs which can be diecast and take over some that are hard to make with the conventional process.

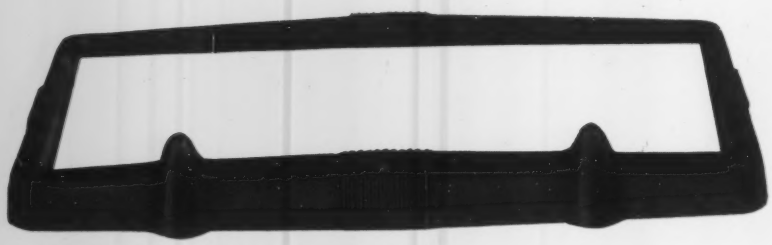
**Benefits of Vacuum** — Thinner sections, denser castings and less scrap are among the advantages claimed.

Mr. Eaton says the machines can handle alloys that have a 50°F range of fluidity. Metal is transferred automatically from furnace to machine in ½ to 3 seconds.

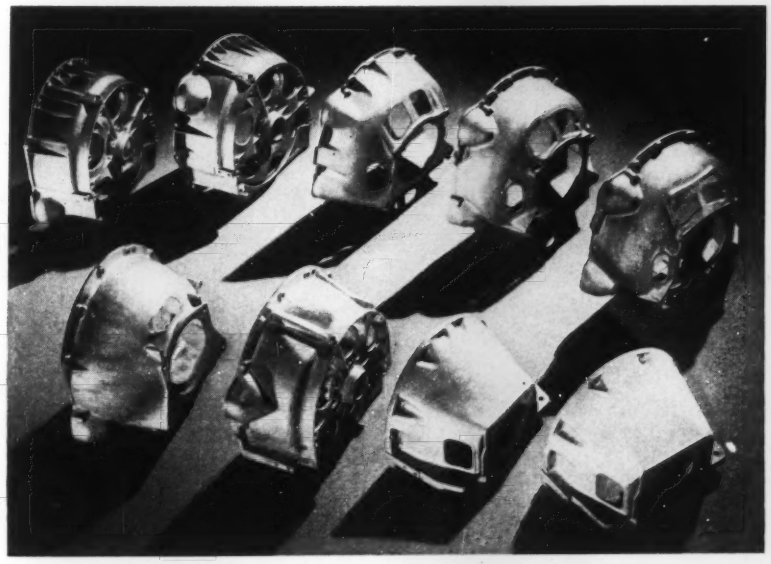
**Zinc**—This was the first metal to be vacuum diecast. Nelmor estimates 60 different zinc parts have been made by its process since it was introduced three years ago.

Cosma Testing Laboratories, Cleveland, reports that tests show a void-free skin section 0.02 in. thicker than that of the same parts made without vacuum. Other advantages: Smaller and fewer voids; improved bending strength; and 19 per cent greater tensile strength.

The potential for zinc vacuum casting, says Mr. Eaton, is in: Plated parts; jobs where porosity is a problem; parts that require



**6** **COLORED . . .** Vacuum diecasting makes it possible to use aluminum alloys which can be decoratively anodized. Possibility: License plate frames



**BIG POTENTIAL**—These torque converters and clutch housings weigh 8 to 16 lb. These and similar designs (some of which combine the transmission case and bell housing in one casting) may boost the production of aluminum diecastings 80 million lb a year

balancing; castings that require baked-on finishes or are heated.

H. E. White, president, Cleveland Hardware & Forging Co., Cleveland, says: "With vacuum you can reduce wall thickness and get good diecastings with good surface finish. It offers the ultimate in lightness, plating surface and soundness."

Wall thicknesses on some zinc parts have been reduced 40 per cent or more. A mask for a portable TV set was made so thin that it weighed less than the aluminum design originally considered.

Mr. White says that the vacuum makes it easier to run adjacent thick and thin walls. With a vacuum, 0.060 in. walls are common and 0.030 to 0.040 in. walls possible. Cleveland Hardware has diecast an experimental cup-shaped zinc part 0.020-in. thick.

Lower injection pressures are possible—in some cases 10 per cent less; in others, 40 to 50 per cent less.

Vacuum helps in making long thin parts. Mr. White looks for them to compete with stampings for such designs.

**How Fast**—Production rates are comparable to those of conventional machines, says Cleveland Hardware. Difficult jobs can be run faster. Cleveland Hardware can make about 250 vacuum cycles an hour with a 50 cu-ft accumulator tank and a 15-hp motor. When another machine is installed, the two accumulator tanks will be interconnected to get a more complete vacuum than the present 20 in. of mercury.

**Case History**—One auto maker compared vacuum with conventional diecasting in the production of a zinc trim part. It was made on a 1000-ton machine and weighed 13 lb as cast, 8 lb after trimming. Production rate (73 an hour) is about the same on both machines, but vacuum production is expected to improve.

With the conventional machine, scrap came to 18 per cent. Vacuum cut it to 6 per cent. Shot pressure was 1500 psi on the conventional machine, 700 psi on the vacuum unit. Yearly net savings are estimated at $4500.

**More Machines** — Eighteen vacuum machines are producing zinc parts; a couple are doing experimental work on aluminum; and Reed-Prentice is building a number of 400 and 600 ton vacuum machines. The firm says that the 400 tonners will have the capacity to make 12-lb zinc castings with a finish suitable for plating. Generally, metal pressure will be as low as 1200 psi.

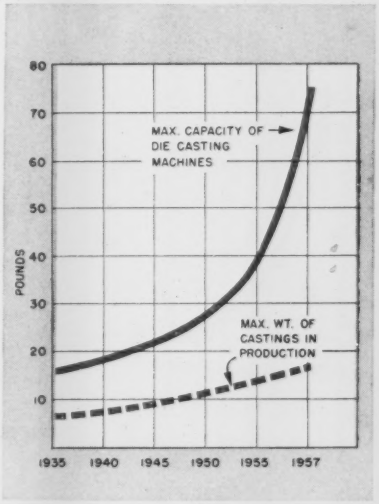
Two companies plan to use the process on brass, and possibilities for use with magnesium look good.

**Systems** — Reed-Prentice machines obtain their vacuum by enclosing the platen area of the machine in a hood. Aurora Metal Co., Aurora, Ill., encloses the die in a housing to cast aluminum bronze and silicon bronze alloys. Other vacuum methods for cold chamber machines are being developed.

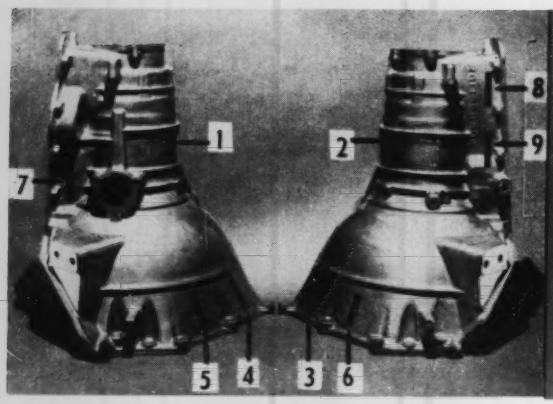
**Other Advances**—The trend to large diecastings has spurred development of automatic ladling devices. Lindberg-Fisher Division, Lindberg Engineering Co., Chicago, makes a unit that delivers shots of up to 30 lb of aluminum.

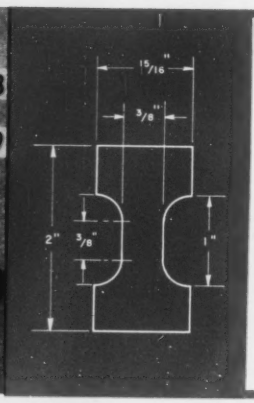
Ajax Engineering Corp., Trenton, N. J., says 120 of its automatic pouring units for cold chamber machines are in operation. Recently, units were made to produce castings up to 40 lb.

National Carbon Co., New York, has developed a mold release agent that coats the die steel with a fine film of boron nitride and protects




**ROOM TO GROW**— Diecasters and the makers of machines have consistently stayed ahead of industry's demand for larger and larger castings

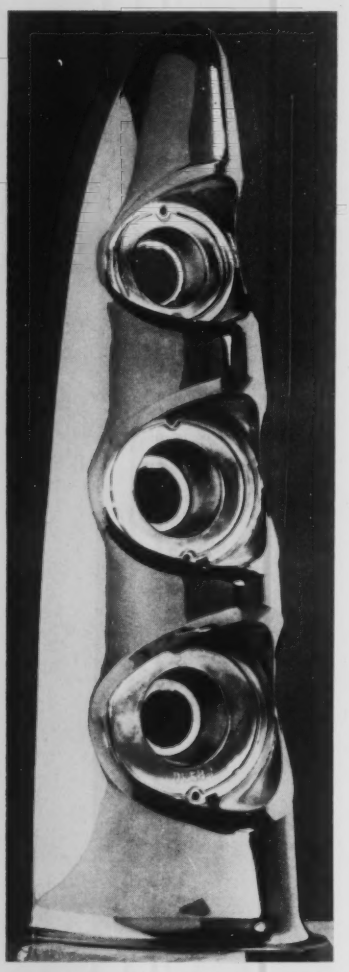



| Production Check Test Bar | Ultimate Tensile Strength psi | % of Max. Value |
|---|---|---|
| 1 | 30,530 | 75 |
| 2 | 30,606 | 75 |
| 3 | 30,240 | 74.5 |
| 4 | 32,720 | 79.5 |
| 5 | 28,918 | 70.5 |
| 6 | 31,622 | 77.5 |
| 7 | 30,414 | 75 |
| 8 | 31,325 | 76.5 |
| 9 | 28,665 | 70 |

Source: Doehler-Jarvis Division, National Lead Co.

**CASTINGS CARRY THE LOAD**—Quality of highly stressed parts can be controlled so that test bars machined from them will have at least 70 per cent of maximum strength obtained on separately cast test bars



Case history of a midwestern automotive supplier: After automatic buffing, 80 per cent of these zinc diecastings had to be hand buffed. Major cause: Poor as-cast surfaces. Vacuum diecasting reduced the extra work to 20 per cent. Major cause: Handling marks. Finishing costs were cut 4½ to 5 cents per piece.

it from soldering. Excellent results have been obtained on many zinc dies and on some aluminum dies.

Alcoa has developed a high-density casting method for small chunky parts. Soundness nearly equals that of wrought materials.

**More Trends**—Along with the increased demand for large machines an interest in small ones for jobs requiring accuracy and high production has developed. Cast Master Inc., Bedford, O., has developed a 75-ton unit for zinc that can make 700 to 800 shots an hour. It can cycle 1300 times an hour.

Some diecasters find the use of inserts is becoming more common. Others have been able to avoid increasing the use of inserts because of the improved properties of alloys.

Apex Smelting Co., Cleveland, reports growing sales of an alloy with 2 to 2.5 per cent zinc which, it says, has better machinability than the SC84A alloy and about equal castability. Tests have shown that zinc contents up to nearly 3 per cent will not affect corrosion resistance.

More engineering is required for the dies used in producing large castings. Careful attention must be given to the basic parting line, gating and venting, core pull arrangements, overflows and flash control. The expected filling time is used to compute gate sizes.

**Cost Angles**—The American Die Casting Institute Inc., New York, says new standards enable buyers to specify tolerances more intelligently and cut costs.

One auto maker is putting an aluminum diecasting plant next to its machining line. Ingot will come in one end and machined castings out the other. This represents the final step in direction many companies have taken.

**The Question**—On make or buy, the American Die Casting Institute says: "It is significant that the great bulk of diecasting production in the U.S. remains in the hands of the custom diecasting industry."

Car manufacturers who operate their own diecasting plants (and represent the bulk of captive output) often buy more diecastings than they make, reports the institute.

Donald L. Colwell, director of laboratories, Apex Smelting Co., thinks that the trend for end product companies to make their own diecastings is coming to an end. He believes that when all overhead costs are properly figured, it is cheaper for job shops to do the work. Reasons: "Diecasting is still an art; experience is all important. And the jobbing diecasting shop has the most experience by far."

There is another reason favoring the jobbing diecaster. When production of the end product maker goes down, the overhead on his diecasting machines goes on. The job shop operator stands a better chance of keeping his machines busy.

---

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

## What Douglas Saved in FORMING

| Operation | Metal | Conventional Method | Subzero Method | SAVINGS |
|---|---|---|---|---|
| Pressure Forming (Verson-Wheelon) | Aluminum | 75% of parts formed in SO condition | 75% of parts formed in SW condition | 463 hr a week |
| Drop Hammer | Aluminum | 0.2 hr per part | 0.15 hr per part | 0.05 hr per part |
| Power Brake | Aluminum | 0.5 hr per part<br>40% scrap | 0.3 hr per part<br>No scrap | 0.2 hr per part<br>100% |
| Stretch Press | Aluminum | 50% scrap | No scrap | 100% |
| Check & Straighten (hand operation) | | 11 hr (avg) per part | 7 hr (avg) per part | 4 hr (avg) per part |

## What Douglas Saved in MACHINING

| | | | | |
|---|---|---|---|---|
| Radial Routing | Aluminum | 0.036 hr per part<br>Deburr—0.079 hr | 0.028 hr per part<br>None | 0.008 hr per part<br>0.079 hr per part |
| Radial Routing | Steel | 0.571 hr per part | 0.226 hr per part | 0.226 hr per part |
| Radial Routing | Phenolic | Wear: two parts | 75 parts | 73 parts |
| Band Sawing | Steel | 0.571 hr per part | 0.286 hr per part | 0.285 hr per part |
| Band Sawing | Titanium | Three parts per blade | Nine parts per blade | 300% improvement |
| Spotwelding | Aluminum<br>Steel | Normal shear strength | Improved shear strength | Increase 100 to 300 lb per spot |
| Gang Milling | 4340 C.M. (forging) | Feed: ¾-in. per minute<br>Rpm: 20<br>Surface: 60 fpm<br>Load: 0.003 in. per tooth<br>Wear: 65 parts | 5 in. per minute<br>20<br>60<br>0.020 in. per tooth<br>169 parts | 4¼-in. per minute<br>Same<br>Same<br>600% improvement<br>260% improvement |

# Cold Treatment Ups Workability

**Subzero coolant speeds cuts in tough metals like AISI 4130. Tools last up to five times longer. It prolongs SW ductility of aluminum alloys, cuts rework 75 per cent**

SUPERCOLD liquids (– 40°F quenchants, coolants and cutting fluids) greatly improve machinability and formability, says Douglas Aircraft Co. Inc., Santa Monica, Calif.

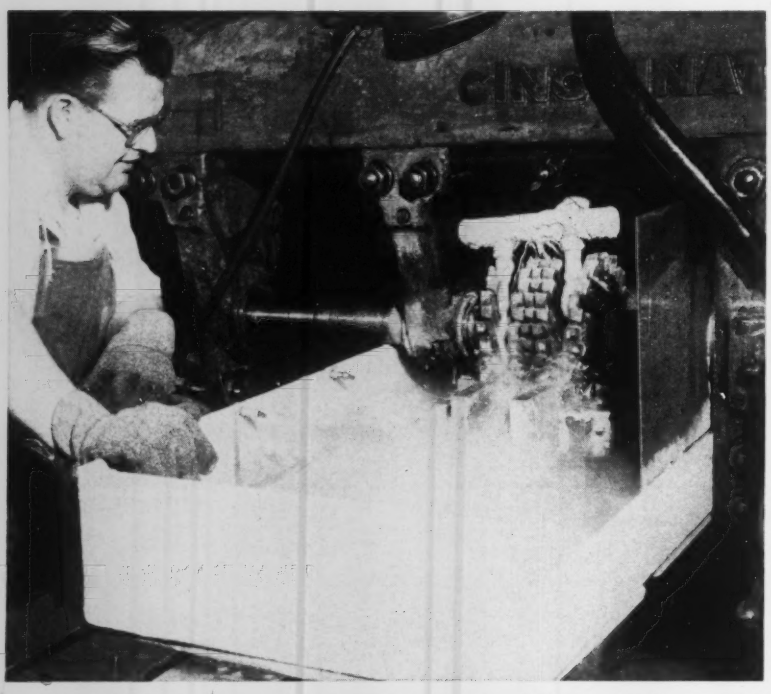
Here are some of the benefits it gets in working with aluminum, steel, titanium, stainless and phenolics:

- Aluminum forming is easier. (Because quick-frozen metal stays ductile longer, one department estimates its annual savings at 24,085 hours. Distortion and warping are also noticeably reduced).
- Metals machine faster. (With supercoolants, time improvements range from 25 to as much as 600 per cent.)
- Tools last longer. (With supercoolants, a high-speed milling cutter that normally handles only three pieces of AISI 4140 has finished up to 51.)
- Machined finishes are better. (Using supercoolants, you can turn a 20 microinch rms finish on AISI 4340 which has been heat treated to 280,000 psi.)

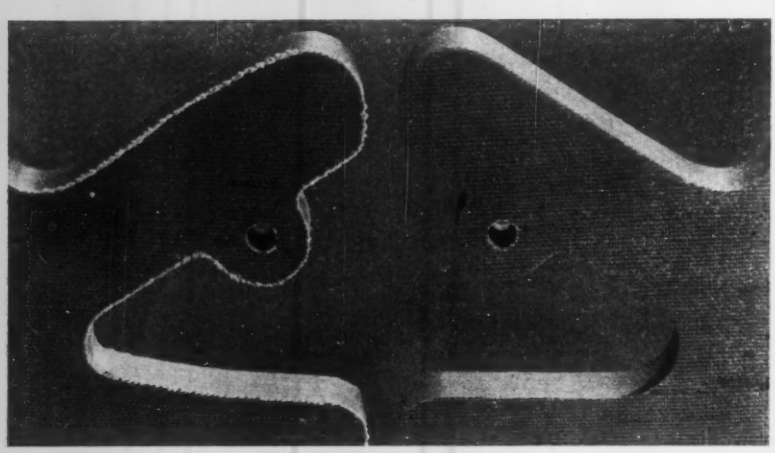
**Forming**—Precipitation hardening aluminum alloys temporarily retain their softness after quenching. At room temperature, the metal becomes fully hard in a short time. To prolong the ductile phase, aircraft firms hold quenched parts in deep-freeze cabinets until they are needed.

Parts ordinarily won't cool fast enough in the deep freeze to prevent partial age hardening. They harden more during forming, which increases splitting, cracking and warping.

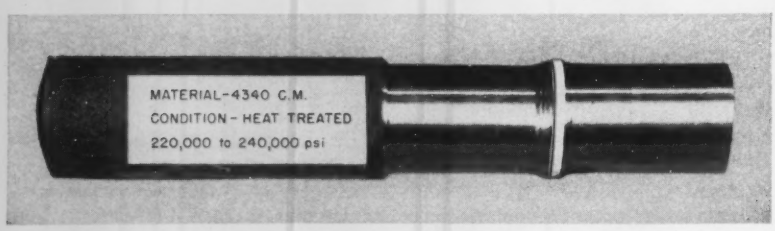
Here's how Douglas solves the problem: Parts are quenched in refrigerated water and transferred immediately to a liquid bath kept between – 40 and – 50°F. Rapid cooling improves and prolongs the ductile phase. It eliminates more



Supercoolant flows directly on cutters and work. Inclined aluminum pan is insulated from machine table. Pump circulates solution of trichlorethylene and Stoddard solvent through refrigeration unit



Phenolic sheet at the left has been routed at normal feeds and speeds. One at right was cut with a supercoolant. Speed, ease of cutting and complete absence of burr are outstanding results




This bar of 4340 chrome-molybdenum steel was turned on an engine lathe equipped with the supercoolant. Cuts were made with different tool bits. Finish at center is exceptional

than 75 per cent of the rework formerly required.

The bath is a combination of trichlorethylene and Stoddard solvent. It remains fluid at low temperatures, is nontoxic and doesn't react with metals.

**Machining** — Douglas experimented with the solution as a coolant for machining operations. Tool life increased, machining time decreased and finishes improved.

Formed steel parts (3/16-in. thick 4130) were subzero quenched before band sawing. Trimming time was cut in half; blade life increased 300 per cent; there was no evidence of work hardening on the sawed edge.

A 4340 C.M. steel bar, heat treated to 240,000 psi, was cut on a lathe with supercoolant. Cuts 0.020 to 0.040 in. deep with a D-6-1 Carboloy tip were made without difficulty or apparent wear of tool edge.

In one test, a 0.063 in. cut was made on a 4340 C.M. steel bar heat treated to 280,000. Speed was increased from 50 to 345 rpm with no tearing or apparent damage to the tool. (Tool life normally is short.)

In another department, both 18-8 fully hard stainless steel and AMS 4925 titanium were routed with the same success.

**Plastics, Too**—Even phenolics respond well to the cold treatment. Douglas routed a piece of ½-in. laminate and cooled the cutter with the cold solution. "The parts cut almost like butter."

Routing time was reduced 50 per cent. No deburring or polishing were required. Cutter life was greatly improved (see chart page 93).

**Variation of Theme**—The firm's engineers also developed a stabilizing treatment for aluminum forgings and bars which cuts warping caused by machining.

Stock in either the heat treated or T-6 condition is immersed in a − 100°F bath, then plunged into boiling water.

The treatment is said to stabilize the metal sufficiently to reduce or eliminate distortion from machining.

---

* *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, O.*

MATCHLESS STEAM HOSE

# Keeping a raging killer under control

Scalding steam is a powerful work-saving servant—but let it get out of hand and it can mean sudden death. Yet this valuable, though unruly demon is tamed by a hose that is *absolutely safe*—U. S. Matchless® Steam Hose. This hose cannot burst—even with steam pressures up to 200 pounds. After long, safe service—far longer than ordinary steam hose—the wall structure, instead of bursting, allows a trickle of steam to merely *leak* through—reducing the pressure and giving plenty of notice that a replacement is finally needed. Safety councils give U. S. Matchless their full approval.

U. S. Matchless Steam Hose is used in steam lines in every kind of industry. For such a husky hose, it is extremely flexible and easy to handle. The tube is made of specially compounded stock to provide high resistance to heat; the carcass is of braided mild steel wire to give outstanding strength, flexibility and ductility; a synthetic rubber cover resists heat, oil and weather.

U. S. Matchless Steam Hose is obtainable at any of the 28 "U. S." District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y.

In Canada, Dominion Rubber Co., Ltd.

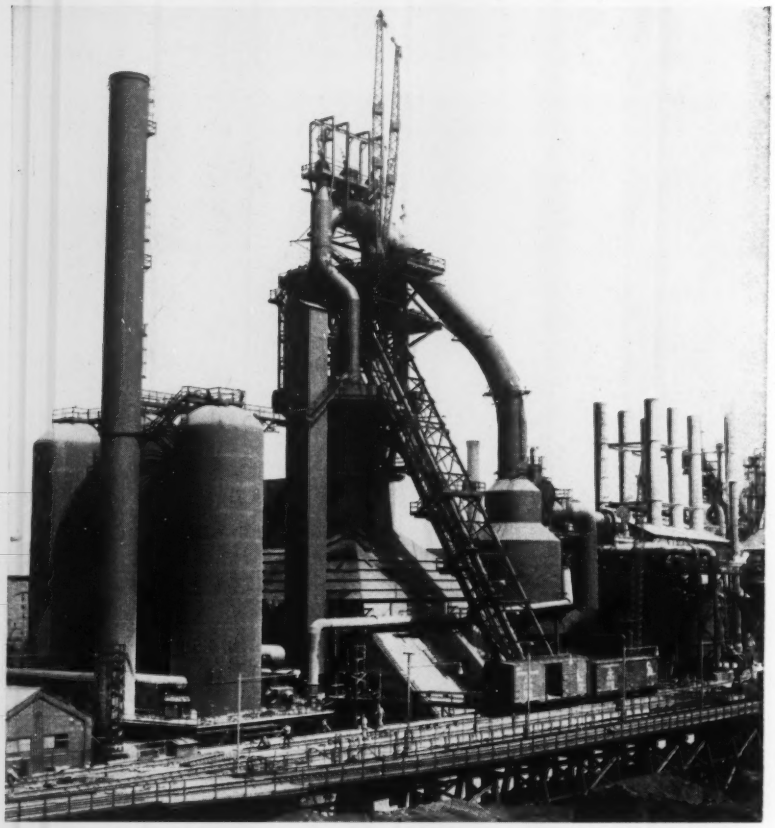
**Mechanical Goods Division**

**United States Rubber**

See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N.Y.

Interest in beneficiation highlights importance of this phase of blast furnace operations today. Other phases appeared in STEEL last week

By CHARLES E. AGNEW
Consultant
Blast Furnace & Sintering Plant Operations
Cleveland



No. 5 stack of the American Steel & Wire Division at Central Furnaces & Docks, Cleveland, which has a daily capacity of 1350 tons of iron

# Maintenance of Equilibrium In Blast Furnace Operation

**PART II**

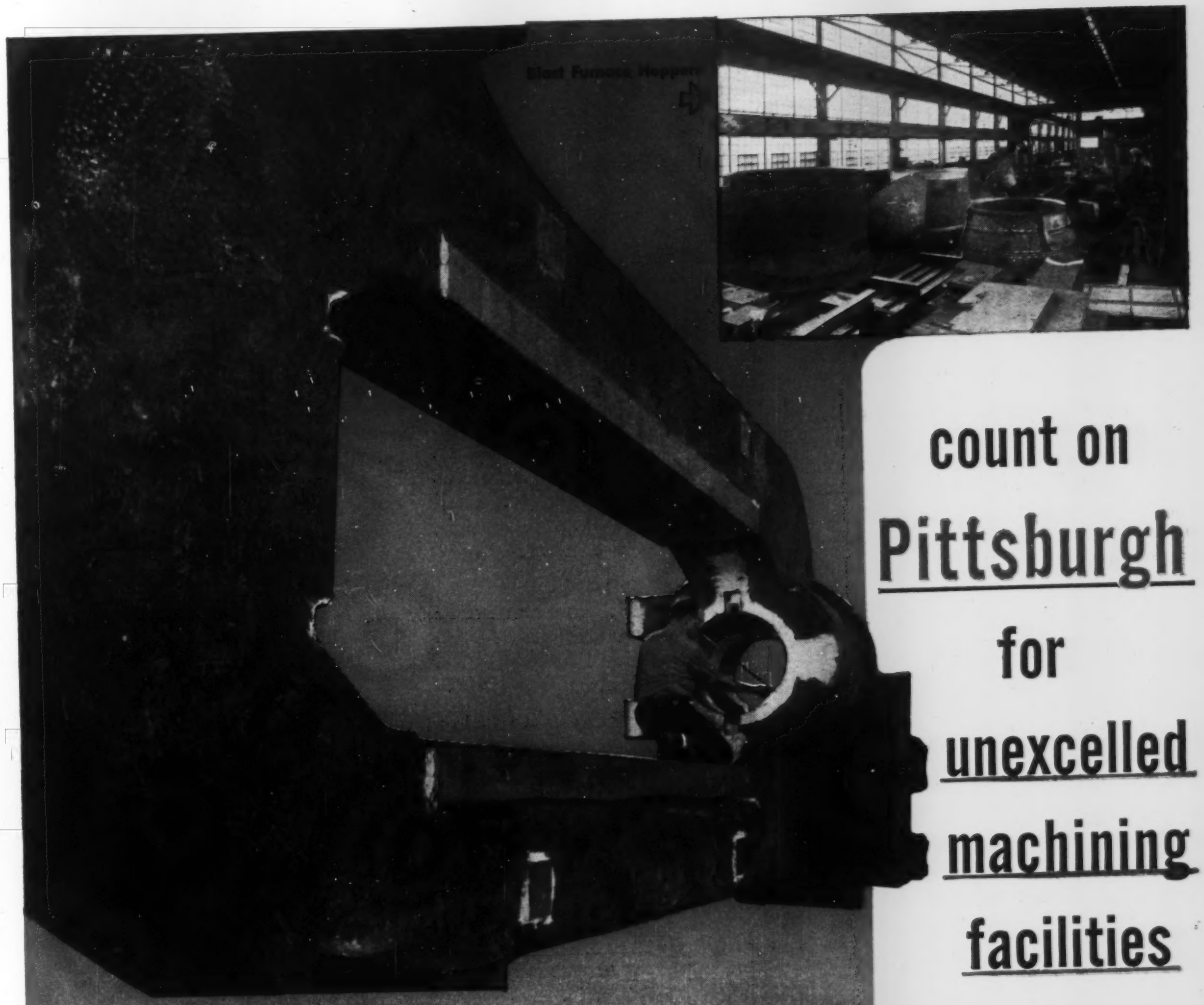
EVERY experienced blast furnace operator is familiar with the conditions of the blow-in period. After the furnace is lighted, the blowing rate and burden weight are held down while the brickwork of the furnace hearth and lining absorb heat to saturation. For a short period thereafter, the blowing rate and burden weight can be increased gradually until a critical state of mechanical equilibrium is reached, beyond which the dual increases cannot be continued without disrupting furnace operation.

Progressive increases in burden weight produce a progressive increase in pressure resistance to gas passage through interstices of the stock column. Compression causes reduction of gas volume in proportion to the amount of pressure resistance which develops. But with decreased gas volume, there is a proportionate increase in gas velocity through the channels of least resistance in the stock column due to the increase in pressure.

**Next Stage**—During the period

**Table III—Consumption of Heat Units by Processing Divisions**

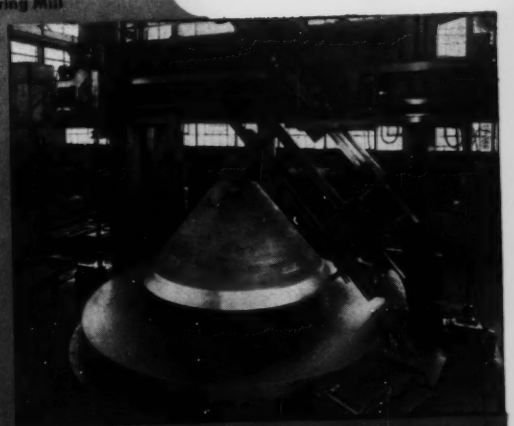
| | South | North | East |
|---|---|---|---|
| Btu consumed | % | % | % |
| Fusion temperature: | | | |
| Below | 54.03 | 56.44 | 29.29 |
| Above | 45.97 | 43.56 | 70.71 |
| Ratio | Below/Above | Below/Above | Below/Above |
| Heat consumption | 1.17:1.00 | 1.29:1.00 | 0.41:1.00 |
| Processing capacity | 0.85:1.00 | 0.77:1.00 | 2.41:1.00 |
| | −0.15 | −0.23 | +1.41 |




# count on Pittsburgh for unexcelled machining facilities

4 High Mill Housing

Blast Furnace Bell on 20'0" Vertical Boring Mill



If it's a machining job that's big and tough to handle — you can count on Pittsburgh to do it. Giant castings such as those illustrated (produced by Pittsburgh Steel Foundry) are finished with remarkable precision.

Highly skilled personnel plus our wide range of equipment will pay off for you on king size machining problems.

"Electric and Open Hearth Steel Castings from 1 lb. to 100 tons"

**Pittsburgh ENGINEERING & MACHINE CO.**

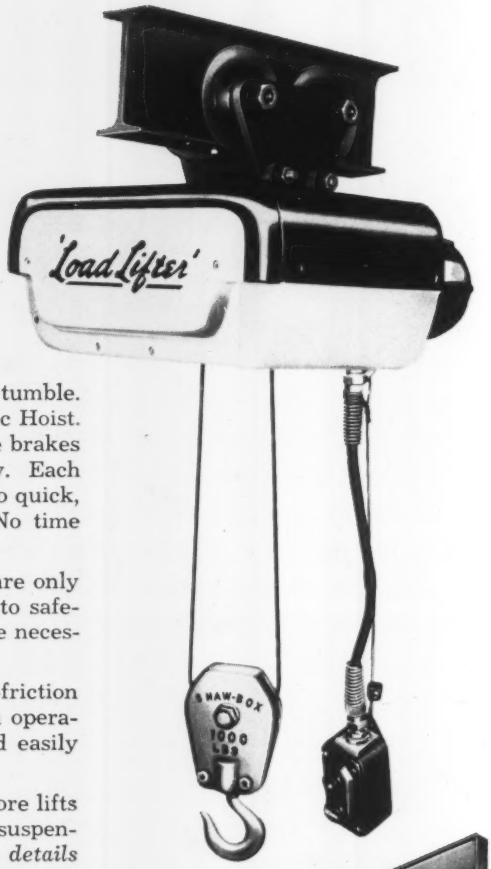
*Division of Pittsburgh Steel Foundry Corporation*

P. O. BOX 986, PITTSBURGH 30, PENNSYLVANIA

PLANT AT GLASSPORT, PENNSYLVANIA

# FAST

## 'LOAD LIFTER' BREAKS PRODUCTION JAMS

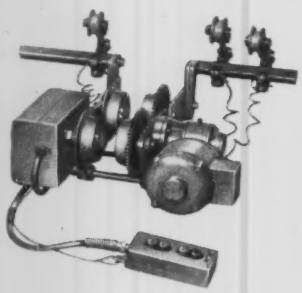



Keep production machines "well fed" and processing costs tumble. You can do it with the speedy Series "600" 'Load Lifter' Electric Hoist. Push a button and it lifts ½-ton loads at 30 FPM. Two separate brakes — load brake and motor brake — act together, automatically. Each brake is so powerful it can hold the full load alone. Braking is so quick, the load doesn't drop back — accurate spotting is a cinch. No time wasted trying and trying to position loads.

The "600" gives you more than safe two-brake control. There are only 24 volts at the push buttons. Every component is extra tough to safeguard man, load and hoist. And when narrow-angle-side lifts are necessary, the flexible wire rope makes the job easy, and safe.

The Series "600" 'Load Lifter' has a simple mechanism and anti-friction bearings to hold down power consumption — to assure smooth operation. The entire hoist is built for economy. It can be serviced easily *in the air.* No long shut-downs to hold up production.

Invest in the Series "600" 'Load Lifter' Electric Hoist and get more lifts per hour. It is available in ½ and 1 ton sizes, with lug or hook suspension or with push type or motor-driven trolley. *Get complete details from your "Shaw-Box" Distributor or write us for Bulletin 408.*



**Motor-Driven Trolley** for Series "600" 'Load Lifter'. Travels at 100 FPM — saves time and effort — smooths out production flow. Hoist may be delivered equipped with trolley or trolley can be supplied for "600" hoists already in service. Installation takes only two hours with common tools.

**Cord Reels** to keep the hoist conductor cord taut and up out of the way of work and worker. Also useful for small cranes and other devices with motors up to 7½ Hp.

**'Load Lifter' Jib Cranes.** Self supporting. Full revolving. Swing easily on ball bearings. A hoist on this crane can serve a 500 sq. ft. work area. Capacities to 5 tons.

57F-4

MANNING MAXWELL & MOORE INC. TRADE MARK

'Load Lifter'® ELECTRIC HOISTS

**MANNING, MAXWELL & MOORE, INC.**

SHAW-BOX CRANE & HOIST DIVISION

384 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: *Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.*

of approach to the critical stage of equilibrium, the space occupied by solid burden materials is gradually increased while that occupied by gas is gradually reduced. The critical relation of space occupancy may be described as the condition where the velocity of gas due to compression has greater effect upon the mechanical action of stock and gas flow than weight of stock has upon compression of gas volume.

With attainment in the space equilibrium, the effect upon flow and counterflow of solid and gaseous matter is reflected in the lifting power of gas velocity versus the force of gravity exerted on solid materials of the burden. If an attempt is made to increase the burden weight after the critical state of space equilibrium has been reached, the A quantity becomes A+ with either arrangement of processing division dimensions (see illustration, STEEL, July 29, p. 120), and there would be:

$$A+ + B = C+$$

Since C represents the total displacement of space available for the preparation processing activity, there is no room for the plus quantity which has been added to A. Mechanical equilibrium in the preparation for smelting division of processing would be destroyed. Inevitably, the overload of burden would cause an increase in the gas velocity beyond the narrow range of near perfection in space equilibrium and gas would spasmodically blow through the upper section of the stock column. The furnace then slips, rolls, or dusts. If such a condition is not corrected immediately, control of the furnace operation will be lost.

**How To**—The cure is effected through the restoration of the burden weight to the original A quantity, or less, and the reduction of the B quantity to B minus (reduction of gas volume through the reduction of blast volume) until conditions of gas and stock flow permit the restoration of normal equilibrium between the A and B quantities.

If the blowing rate is increased above the normal equilibrium rate in an effort to increase iron production by increasing the stock travel rate through the furnace, the B quantity of the equation becomes B plus, and there would be:

$$A + B+ = C+$$

The effect upon the mechanical equilibrium would be the same as when a plus quantity is added to the A quantity.

It is common knowledge that a fast blowing rate forces the use of a relatively light burden. A slow blowing rate permits the use of a heavier burden. With such adjustments, the equation would read:

$$A- + B+ = C, \text{ or}$$
$$A+ + B- = C$$

Since plus or minus quantity is equalized in effect by a quantity of opposite value in either case, the equilibrium in mechanical activity can be maintained with either arrangement of A and B quantities.

**Blast Temperature** — Deficiency in the capacity to prepare stock for smelting in relation to the capacity to smelt stock places a definite limitation upon the temperature of the blast which can be used. Thermal requirements for the smelting division of processing are determined by the mineral composition of the slag and by the chemical composition specified for the iron product. Sensible heat in the smelting division of processing in excess of smelting requirements will be reflected two ways: 1. Chemical composition of the iron product cannot be held to specification. 2. Mechanical equilibrium in the gas and stock flow between divisions of processing cannot be maintained.

Heat is energy, but it does not occupy space. But a plus value added to the Y quantity of the smelting division equation will be reflected in the X quantity. The equation may be written:

$$X + Y+ = Z+ \quad \text{or}$$
$$X+ + Y = Z+$$

With an increase in the Y quantity, the gas leaving the upper section of the smelting division of processing will be increased in volume and/or velocity. Such condition would cause a plus quantity to be added to the B quantity of the preparation for smelting equation. The combined effect of the increase in the Y quantity would be:

Smelting preparation

$$A + B+ = C+$$

Smelting

$$X + Y+ = Z+$$

Since CZ equals the total displacement of space within the furnace, mechanical equilibrium within each division of processing, as well as between divisions, would be destroyed by the plus quantities. Control of the furnace operation would be lost.

**Relationships** — As described, mechanical equilibrium in processing activity cannot be maintained with continuous addition of plus quantities; there must always be a compensating minus quantity to equalize the effect from a plus quantity, or vice versa.

Because there will always be some degree of variation in the properties of burden materials (even those of the same general class) and in the properties of natural air, the equilibrium in processing activity never is maintained to perfection continuously. The consistency of the relationship between plus and minus quantities of processing activity

**Table IV—Consistency of Relationship Between Plus and Minus Quantities**

| | South | North | East |
|---|---|---|---|
| Ratio, total burden:coke | 2.20:1.00 | 2.91:1.00 | 3.00:1.00 |
| Lb gas/gross ton iron | 13,804 | 9,962 | 6,728 |
| In relation to South: | | | |
| Burden, % | ..... | +32.2 | +36.3 |
| Gas, % | ..... | −27.8 | −51.2 |
| In relation to North: | | | |
| Burden, % | ..... | ..... | + 0.03 |
| Gas, % | ..... | ..... | −32.4 |

(regardless of the class of burden materials used), is illustrated in Table 4, with data from the three furnace operations in Table 2 (STEEL, July 29, p. 123).

**Weights**—With an increase in burden weight, there is a decrease in gas weight. The wider range in burden and gas weights between South and East operations compared to a like range between South and North operations. The far greater range between the weights of burden and gas at North and East are caused by a difference in the chemical composition of the burden materials, but the plus and minus relationships are consistent.

A change in the A quantity of the preparation for smelting equilibrium equation is always restricted to a change in the weight of the burden charged into the top of the furnace. A change in the B quantity is affected by a change in the volume of air blast entering the tuyeres, the temperature in the smelting division of processing and the amount of volatile matter evolved from the burden materials. A furnace will refuse to "take" even a few points of burden increase, or a 1000 cfm increase in blast, above the normal maximum. This fact sustains the earlier statement that the ratio of processing capacity between division of processing may exist in a wide range, but the equilibrium in processing activity must be maintained within a narrow range.

**Equilibrium** — Temperature is concentrated heat volume. In the study of blast furnace thermal requirements, heat volume must be the basic consideration.

Every chemical reaction will evolve or consume a fixed amount of heat, and the flow of heat will be reversed with the reversion of the reaction. Every reaction has a certain temperature requirement for its initiation, but there can be a vast difference in the volume of heat consumed or evolved by reactions effected at like temperatures. Examples are brought to light in an extract from this heat balance calculation:

| | Sensible Heat Carried Off | |
|---|---|---|
| By: | °F | Btu Consumed |
| Top gas (dry) | 335 | 81.8/lb gas |
| $H_2O$ in top gas | 335 | 1166.0/lb $H_2O$ |
| Slag | 2568 | 840.0/lb slag |
| Iron | 2525 | 485.0/lb iron |

Maintenance of equilibrium in thermal activity resolves itself into a problem of equitable division of heat between divisions of processing—as determined by the chemical composition of raw materials used and the thermal requirements created.

**Thermal equilibrium equations:**

Let CZ=Processing capacity of the combined division of processing.

**Preparation for smelting:**

Let A=Heat volume (Btu) requirements. (Evolution of volatile matter from stock, heating residual solids to their fusing temperatures, maintaining top gas temperature above the dew point of water vapor entrained with top gas.)

Let B=Heat volume proportionate to requirements.

Let C=Processing capacity of the division. Equation, A+B=C

**Smelting:**

Let X=Heat volume requirements. (Consumed by smelting zone reactions, supplied to preparation for smelting division of processing.)

Let Y=Heat volume proportionate to requirements.

Let Z=Processing capacity of the division. Equation, X+Y=Z

**Combined divisions of processing:**

Equation, C+Z=CZ

The mechanical equilibrium equations showed that effects from changes in plus or minus quantities must be compensated for with quantities of opposite value to maintain equilibrium. In the thermal equilibrium, any change in plus or minus quantities must be supported with quantities having like value.

**Heat Volume** — The thermal work capacity of the divisions of processing is attainable only when heat volume is supplied in amounts proportionate to the requirements of stock being processed. Heat balance data of Table 2 illustrate this. They show the great range consumed in the production of a given weight of iron. At the same time, equilibrium in thermal work can be maintained through the equitable division of heat between divisions of processing.

Differences in chemical composition of raw materials processed and the composition specified for the iron product explain the difference in total heat volumes required for the three operations in Table 2; consumption of heat in the divisions of processing explains the need for equitable division of total volumes.

Equitable division of heat between divisions of processing is effected through an adjustment

# Annealing Symposium Planned

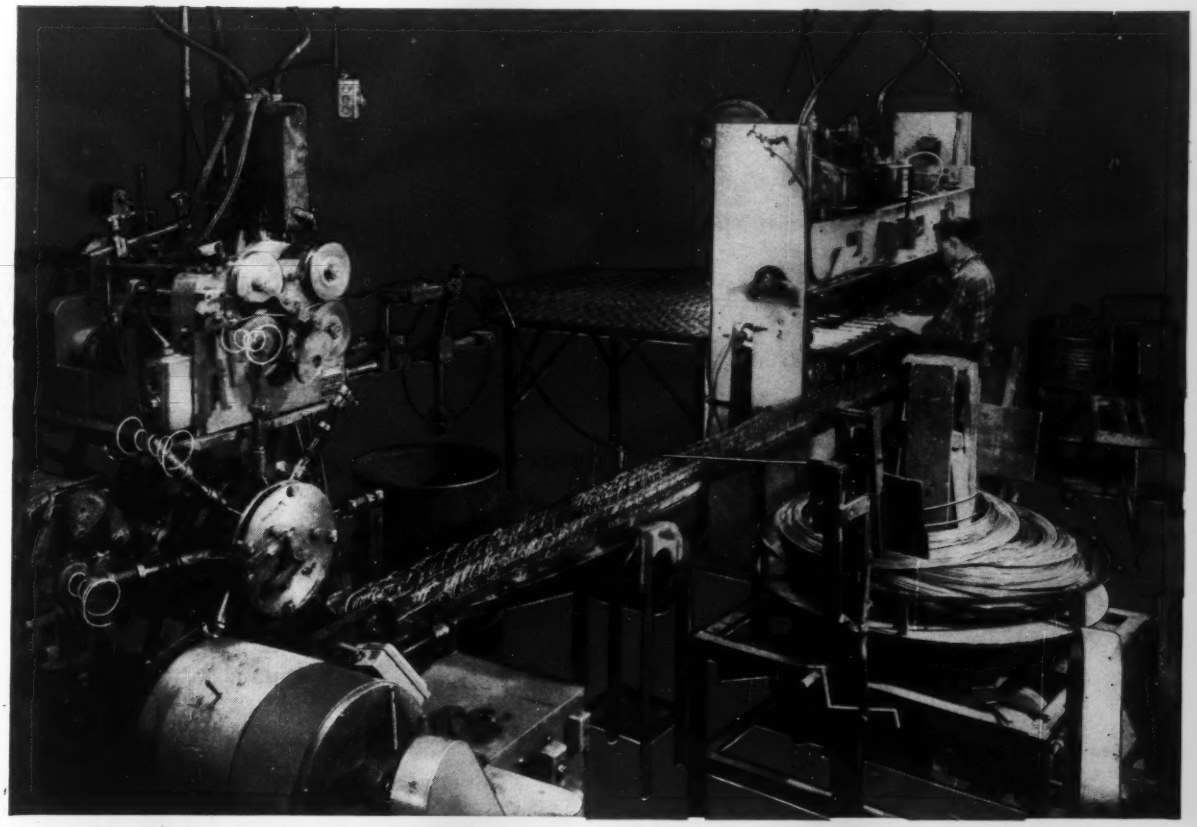
World authorities on steelmaking will meet at Case Institute of Technology, Cleveland, Oct. 29-30, for the first International Symposium on the Annealing of Low Carbon Steel. It is being sponsored by Case Institute and Lee Wilson Engineering Co. Inc., Cleveland.

Purpose of the session, says Dr. T. Keith Glennan, president of Case Institute, is to critically review the status of the process. Industrial demands for high quality, inexpensive sheet steel have emphasized the need for optimum efficiency in annealing.

Lee Wilson, chairman of the sponsoring company, who recently toured Russian and European steelmaking facilities, explains: The world's large steel producers are vitally interested in modern annealing techniques to provide greater quality control of low carbon and alloy steels.

Basic principles of annealing will be discussed Tuesday morning, Oct. 29. Attention will be centered on operational variables in the afternoon, and a round table discussion on performance criteria will be held in the evening. On Wednesday, the symposium will open with a session on operating techniques. Economics of annealing will dominate the afternoon meeting. Attendance is by invitation, but requests will be considered. Contact: Case Institute of Technology, Cleveland 6, O.

Double cone springs are produced automatically on this Wunderlich special high speed automatic coiling and knotting machine at the Sealy Mattress Company, Cleveland, Ohio. Machine coils, crimps, knots and heat treats springs made from 13½ gage Mastercraft spring wire, supplied in 600 lb. bundles.



# UNIFORMITY OF J&L WIRE

## speeds spring production

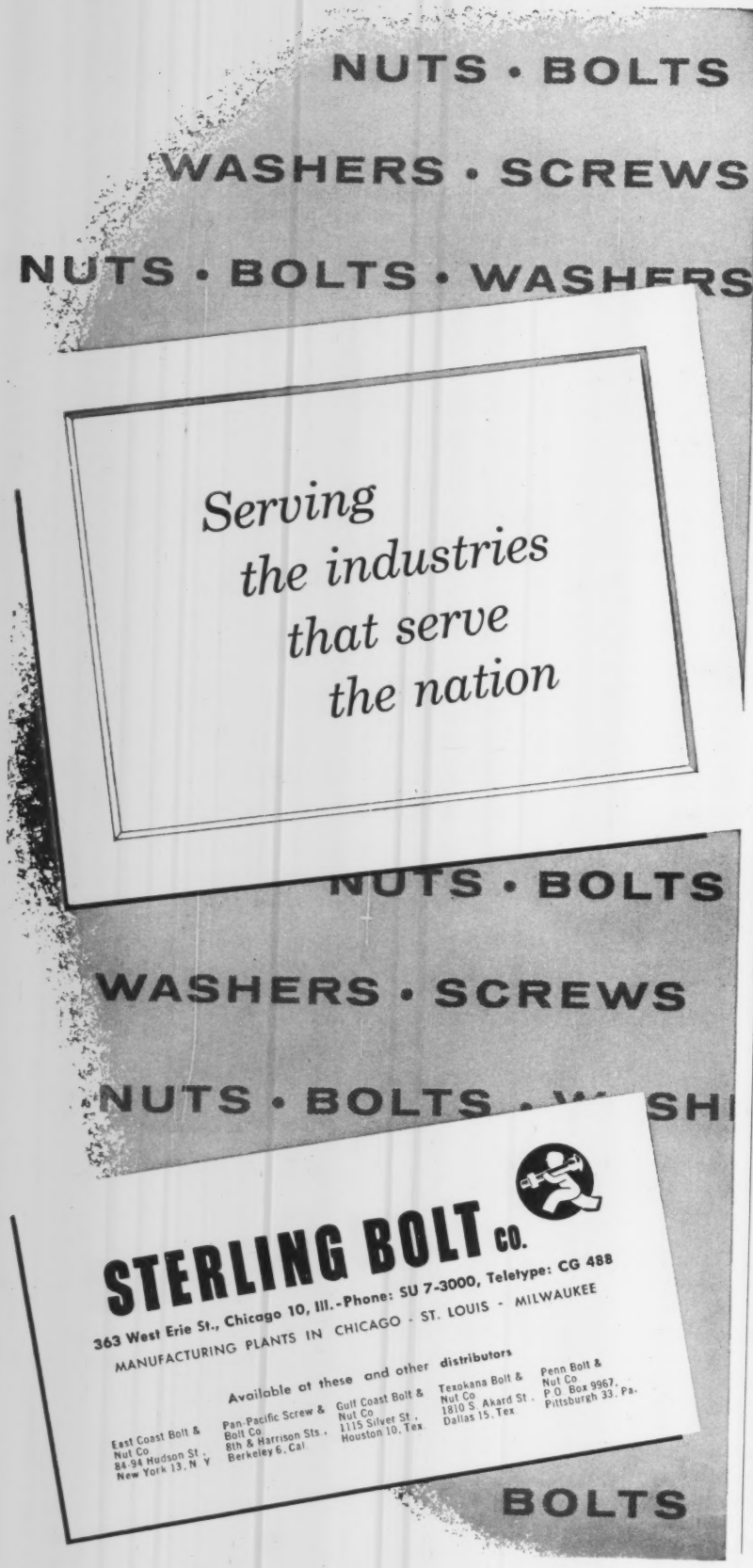
J&L spring wire reduces number of rejects, increases production, in modern automatic operations. One reason is that every bundle of spring wire is produced to closely controlled tolerances.

Rigid quality control assures uniform physical and dimensional characteristics. Every coil of famous Mastercraft, hard-drawn MB or Electromatic oil-tempered MB spring wire is thoroughly tested.

Try this superior Jones & Laughlin spring wire. You'll find it's tops in quality, competitive in price.

Call your J&L representative or write to the Jones & Laughlin Steel Corporation, Dept. 404, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

**Jones & Laughlin STEEL** ... a great name in steel


NUTS • BOLTS
WASHERS • SCREWS
NUTS • BOLTS • WASHERS
Serving
the industries
that serve
the nation
NUTS • BOLTS
WASHERS • SCREWS
NUTS • BOLTS
STERLING BOLT CO.
363 West Erie St., Chicago 10, Ill.-Phone: SU 7-3000, Teletype: CG 488
MANUFACTURING PLANTS IN CHICAGO - ST. LOUIS - MILWAUKEE
Available at these and other distributors
East Coast Bolt & Nut Co 84-94 Hudson St. New York 13, N Y
Pan-Pacific Screw & Bolt Co. 8th & Harrison Sts. Berkeley 6, Cal
Gulf Coast Bolt & Nut Co 1115 Silver St. Houston 10, Tex
Texokana Bolt & Nut Co 1810 S. Akard St. Dallas 15, Tex
Penn Bolt & Nut Co P O Box 9967, Pittsburgh 33, Pa.
BOLTS

**PROGRESS . . .**

in the blowing rate and the temperature of blast.

The volume of heat available for delivery to the preparation for smelting division is determined by that available in the smelting division which is in excess of its requirements. Obviously, heat in sufficient volume (the Y quantity of the smelting division thermal equation) and at sufficient temperature (concentrated heat volume) must be maintained in the smelting division to meet its requirements. Otherwise, the furnace cannot be operated.

**One Requirement** — Supplying heat to the preparation for smelting division is one of the smelting division requirements (part of the X quantity of the smelting division thermal equation).

Heat in the smelting division which will satisfy requirements of the preparation for smelting division without being detrimental to the smelting division constitutes maintenance of thermal equilibrium in the smelting division and between divisions.

Take furnaces with processing capacity ratios similar to those of the South and North operations of Table 2. The heat in the preparation for smelting division of processing in excess of the B quantity of the preparation division thermal equation will be directly reflected in violent disturbances in the mechanical equilibrium of stock and gas flow through the division. Indirectly, there will be excessive pressure resistance to the entry of blast at the tuyeres.

Consider furnaces with a processing ratio similar to that of the East operation of Table 2. Heat in excess of the B quantity will be reflected in: 1. An increased depth of the initial fusion zone to the extent of fusing a ring on the inwalls of the furnace. 2. Thereafter, a violent disturbance to the mechanical equilibrium of the stock and gas flow through the division.

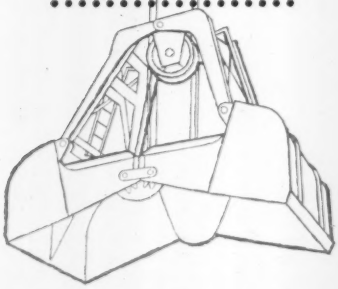
After the permissible blowing rate for the class of materials being processed has been established, adjustment in blast temperature is commonly used to maintain thermal equilibrium within the practical range of near perfection.

**Tight Furnace**—Take a look at South and North in Table 2. In

# INDUSTRIAL BROWNHOIST

## OPEN TYPE COAL AND ORE GRAB BUCKETS CARRY BRIMMING PAYLOADS...

## *EVERY BITE!*



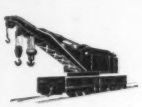
Built to the same rigid standards of quality as are all INDUSTRIAL BROWNHOIST machines, these open-type coal and open-type ore buckets are designed for perfect weight distribution, to increase the payload.

Simplified construction makes upkeep simple. Annealed steel castings, alloy steel shapes and plates assure a lifetime of powerful service. I-B open-type coal grab buckets range from 84 to 480 cu. ft. capacities; ore buckets from 120 to 275 cu. ft. . . . and in custom designs where necessary for special requirements.

For further information on I-B job-engineered buckets —open type grab, link type, flush link type and clamshell—write for your copy of new catalog 574, just off the press. It gives you complete specifications on all I-B buckets and grapples, and contains many photographs of this money-making equipment at work.

# BROWNHOIST

CLAMSHELL BUCKET



250 TON WRECKING CRANE

COAL-ORE BRIDGE

CAR DUMPER

LOCOMOTIVE CRANE

**INDUSTRIAL BROWNHOIST CORPORATION, BAY CITY, MICHIGAN** • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal, Canada • AGENCIES: Detroit, Birmingham, Houston

SUBSIDIARY OF Penn-Texas CORPORATION

203

operations where preparation for smelting and smelting capacities approach a 50:50 ratio, but are slightly deficient in preparation capacity, the narrow limitations of the near-perfection range are commonly manifested this way: Operations will "hang" easily if blast temperature is not promptly adjusted when change in thermal conditions within the furnace calls for adjustment.

In furnace operations where there is wide divergence from the 50:50 ratio and operations are deficient in smelting capacity (see East, Table 2), there will be no limit to the blast temperature which can be used so long as smelting capacity is deficient in relation to preparation for smelting capacity.

**Timely**—Widespread interest in the use of beneficiated raw materials revitalizes the importance of equilibrium in the processing activity to control furnace operation.

A change in raw material properties does not change operating principles, but it does require adjustment in practice. The nature of the adjustment is not determined by the will of the furnace operator but by the processing requirements of the raw materials.

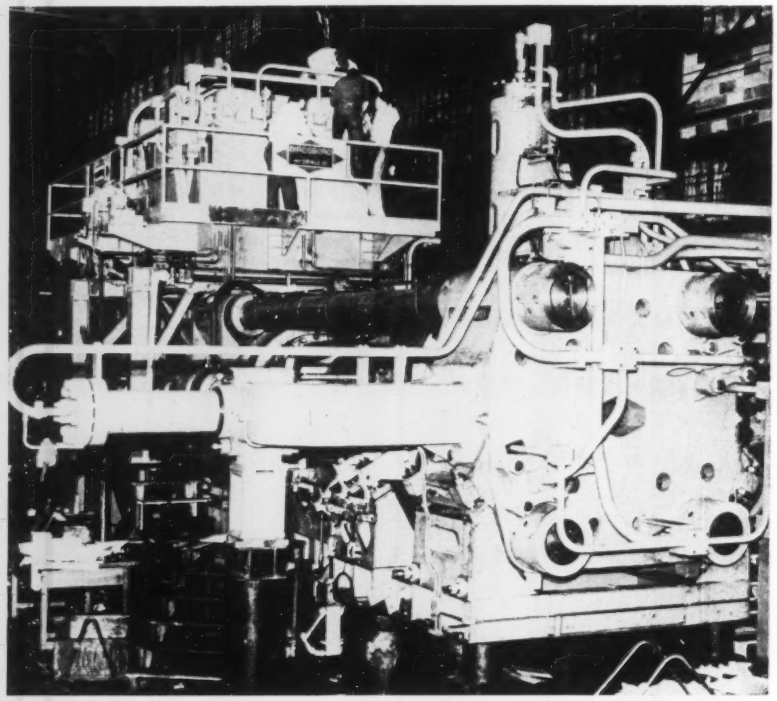
Blast furnace operating principles are best served when maximum production is obtained with minimum conversion cost. Raw materials used at the three furnace operations in Table 2 range from natural low grade to fully beneficiated high grade. Raw materials used in any furnace operation must be within the range of the Table 2 materials. The advantage of beneficiated materials to conversion economy is reflected in these fuel rates:

| | South | North | East |
|---|---|---|---|
| Lb coke per gross ton | 2626.85 | 1682.00 | 1350.00 |
| Reduction from South | | 944.85 | 1276.85 |
| Reduction from North | | | 332.00 |

Evaluation of the pounds of coke saved per unit weight of iron produced indicates the desirability of beneficiation.

[1] U. S. Bureau of Mines technical paper No. 391.

• *Extra copies of this article and Part I, which appeared last week, are available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, O.*



This 3000-ton extrusion press is installed at the Baltimore Division of Revere Copper & Brass Inc., Baltimore

# Extrusion Press Is Versatile

**Variable delivery pumps provide different extruding conditions. Dual control and three die locations help minimize down time. It can operate when one pump is down**

AN aluminum extrusion press with interlocked controls provides automatic sequence cycling. Its builder: Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

The press (its capacity is 3000 tons) extrudes aluminum sections and tubing in round, rectangular and irregular shapes.

It can be equipped to produce wide flat shapes from rectangular billets.

Regulation of the extrusion speed (0 to 42 in. a minute) is electronically signaled by a dual control. It can be controlled from the main pulpit or from a location overlooking the emerging extrusion.

**Operation** — Four radial piston pumps have a variable delivery rate to direct optimum quantities of oil to the press components. Pumps are driven by two 350-hp motors and can deliver up to 432 gallons of oil a minute.

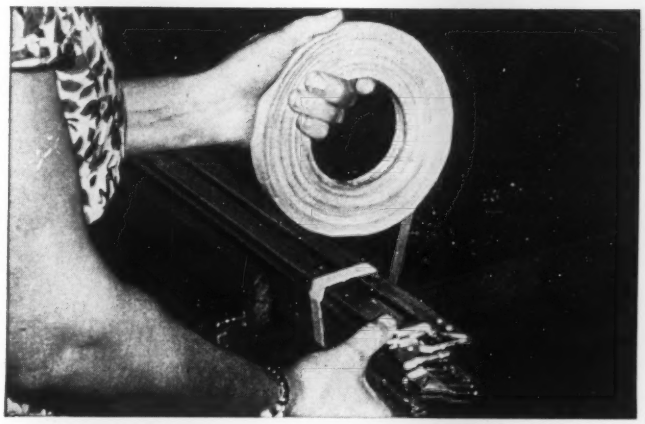
The press can operate on three pumps if one needs to be repaired.

A mandrel on the end of the main ram moves into the die to form the interior shape of the extruded shape. An alternate die location permits a second die to be inserted, removed, dressed or adjusted while extrusion continues on the first die. A third position allows ejection of unextrudable billets.

The press may be jogged through one operation at a time by separate controls, or automatic sequence cycling can be used to control the complete operation.

# Polyken Tapes give you

# ALL WORK—NO WASTE



***Polyken* Tape solves packing problems.** This job of bundling aluminum strips requires only a narrow strip of *Polyken* Tape No. 113, one and a half times around the circumference of the bundle . . . at a considerable saving of time and tape.

***Polyken* Tape offers greater protection.** These cutting tools are guarded with a durable, abrasion-resisting sheath of *Polyken* Tape No. 113. Twice as much of a fragile tape wouldn't give stored tools equal protection. And this *Polyken* Tape pulls off clean.

## THE RIGHT TAPE CAN SAVE MONEY WHILE SAFEGUARDING PRODUCT QUALITY

*Here's how:* When you select a utility tape from the *Polyken* line you get as much stretching power, tensile strength, tear resistance and moisture resistance as you need.

You don't pay for special qualities unless you need them.

Take *Polyken* No. 113 as an example. See how this tape offers all the advantages of cloth back adhesive tape in strength, ease of application and clean pull off yet is priced competitively with other methods of sealing, holding, bundling or protecting.

Plant surveys show this tape is being used for more than 245 specific applications—all at a savings! Is *Polyken* No. 113 at work for you?

**Polyken®**

**INDUSTRIAL TAPES**

THE KENDALL COMPANY

Polyken Sales Division

Use this convenient coupon to find out how ***Polyken*** Tapes can mean "all work—no waste" on the job for you.

Polyken, Dept. S-H
309 West Jackson Blvd., Chicago 6, Illinois

Please send me physical properties and further information on *Polyken* Economy-Utility Tapes.

Name_____

Company_____

Street Address_____

City_____ Zone____ State_____

# MILWAUKEE SOLVAY

MILWAUKEE COKE SOLVAY

## Highest Quality Foundry Coke Since 1904

Year after year MILWAUKEE SOLVAY COKE ranks as a superior foundry coke because it is made from *carefully selected* coal:

1. LOW IN ASH
2. LOW IN SULPHUR
3. HIGH IN CARBON
4. HIGHLY RESISTANT TO SHATTER AND ABRASION

1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957

**SERVICE DEPARTMENT AVAILABLE WITHOUT OBLIGATION**

P M

## PICKANDS MATHER & CO.

CLEVELAND 14, OHIO

Chicago • Cincinnati • Detroit • Duluth
Erie • Greensboro • St. Louis • Washington

*Serving Industry Since 1883*

**IRON ORE • PIG IRON • COAL • COKE • FERROALLOYS**

## Aluminum for Hot Uses

Powdered aluminum products that can withstand 900°F have been developed at Alcoa Research Laboratories, New Kensington, Pa.

They are available as extruded shapes, forgings, sheet, foil, drawn and extruded tubes, impact extrusions, fasteners and wire.

The metal is said to be more economical and easier to fabricate than titanium and has a higher thermal conductivity than titanium or stainless steel.

**How It's Made**—Each flake of a fine aluminum powder is coated with aluminum oxide. When the powder is compacted and worked, the oxide strengthens the product and gives it stability at elevated temperatures.

The powders are formed into compacts under pressure and heat. They are extruded into shapes for further fabrication.

If use requires resistance to friction, parts can be anodized. The hard oxide coating obtained prevents moving parts from sticking.

**Applications**—The metal is used for standard parts in a major jet aircraft engine. It is being tested for use in honeycomb sandwich structures, air-borne heat exchangers and lightweight fasteners.

**Three Alloys**—Domestic aluminum powders are used to make M257, and powders imported from Switzerland are used for M430 and M470.

## Extruded Steel Cuts Costs

Cleveland Hard Facing Inc. is reducing time and material costs by using extruded steel tubing in the manufacture of a propane engine part. Solid bar stock was formerly used. The tubing is made of high speed steel, type SSV-54.

Using 2-in. solid bar stock, only 16 pieces an hour were cut. With the same equipment, the company now cuts about 100 pieces an hour. Metal and machining time are reduced because the extruded product has thin walls.

The company was able to increase yields up to 250 per cent (by weight.) Estimated economies: 16 per cent per ring in material cost, about 9 per cent per ring in machining time.

Special trailers transport the steel from the rolling mill

# Trucks Keep Steel Moving

**They carry it from the rolling mill directly to the finishing plants. It's a production line operation between plants spread over a 335-acre area**

AUTOCAR trucks helped eliminate a tough handling problem at the 335-acre Cleveland Works of Jones & Laughlin Steel Corp.

For years, coils were transferred from the rolling mill to railroad cars and shipped to the finishing mills. A special transportation material handling department was set up late in 1954 to develop a continuous handling operation using trucks to provide the flexibility needed within the plant.

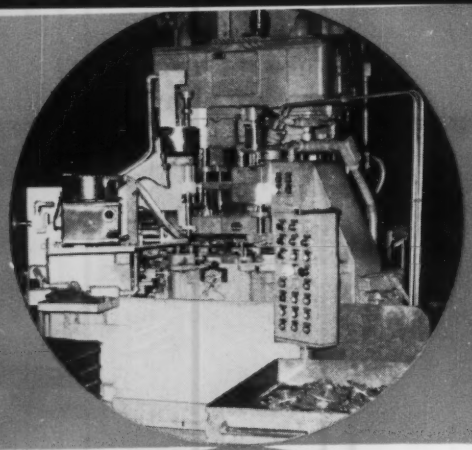
**Trailer Design** — Len Abrams, American Cartage Co., and Joseph P. Kalivoda, product sales engineer, Fruehauf Trailer Co., consulted on the trailer design. An inverted V-block running crosswise on the trailer bed was designed to handle the coils, which are moved from the mill to the trailer by lift truck. The Autocar tractors were made by White Motor Co., Cleveland.

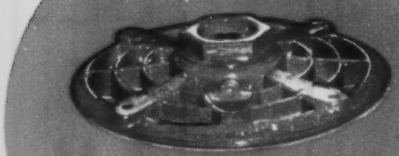
The trailer is 39 ft 6 in. long to accommodate the 40-ft plate without overhang. The coil can be laid on its side and lodged in the V-block without rolling or chaining. This prevents edge damage to the coil. Original estimates called for two tractors and 15 trailers, plus one spare to handle hot shipments or emergency runs.

**Benefits** — Constant efforts are being made to improve the efficiency of the operation. Careful logs are kept on such things as how the equipment is being used and how much improvement in performance is made each month.

The truck fleet is readily alerted to special demands by radio control dispatching. Units anywhere in the plant area are under complete control.

Shipments go direct from the rolling mill to the finishing plant to which they are assigned. Special storage has been arranged at each plant so coils or plates can be stocked to eliminate interruptions in operating schedules.

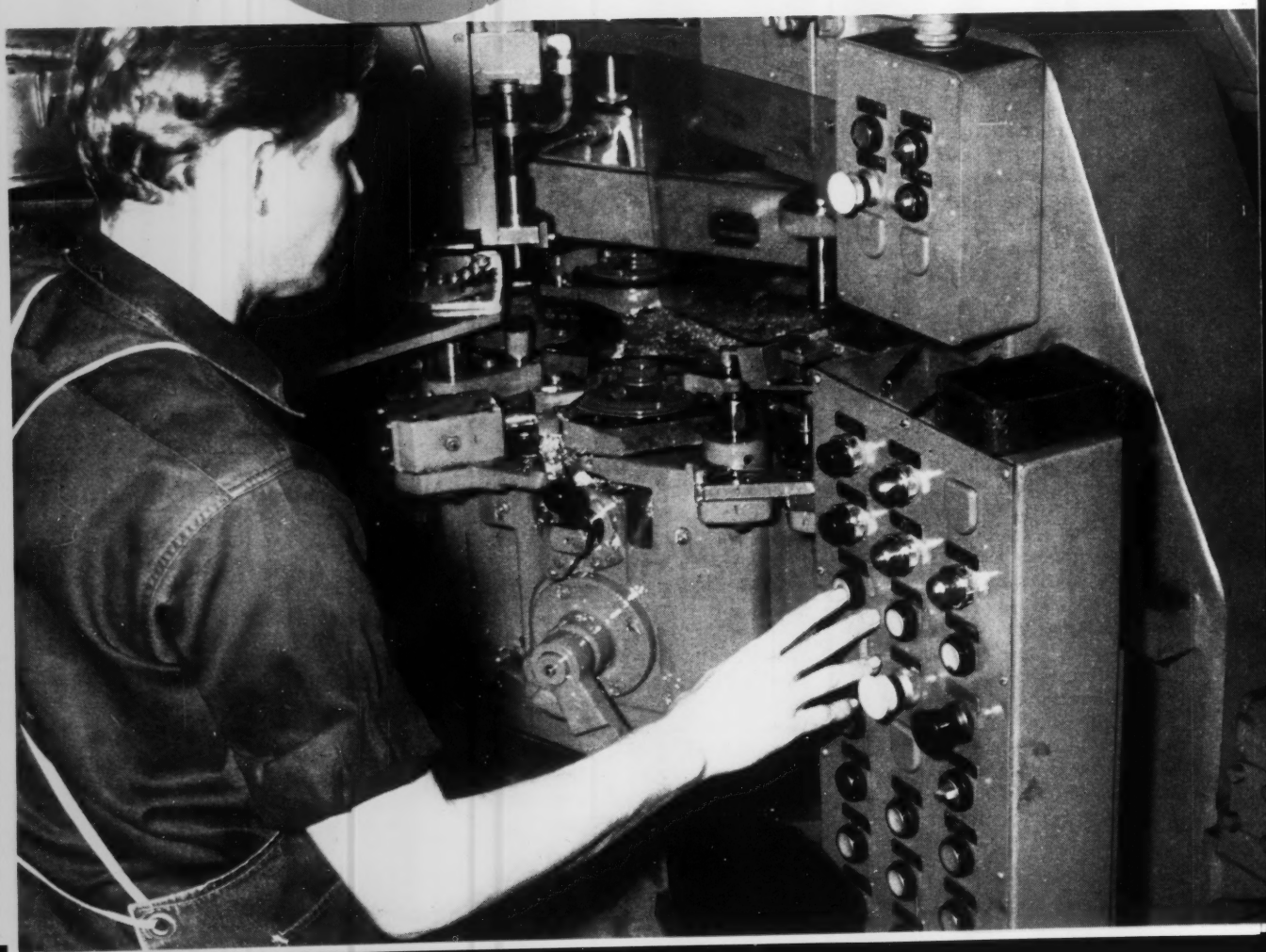




*Two sizes of motor end-plates are assembled, bored, drilled and tapped in a Natco 3-Way Machine.*

*At Wagner Electric Corporation*

# One Natco



NATCO

# Assembles, Bores, Drills and Taps... Reduces Labor Cost 70% On Small Motor End-Plates

This Natco combination assembly and multi-drilling machine presses a bearing sleeve into the end-plate, rough and finish bores the outside bearing-cap hole, drills an oiler hole at an angle, drills four (4) thru-bolt holes, and drills and taps two (2) 8x32 cover plate holes. *Production is 170 pieces per hour.*

This Natco accommodates two sizes of motor end-plates without changes in the basic rotary-table tooling. In addition to this important versatility the engineers at Wagner Electric point out these other advantages:

- *one operator* controls the assembly and machining from one station.
- *work scheduling* is simplified due to the short machine cycle.
- *in-process inventory* can be kept at a minimum because of high production rate.
- *floor space* is made available for other operations.

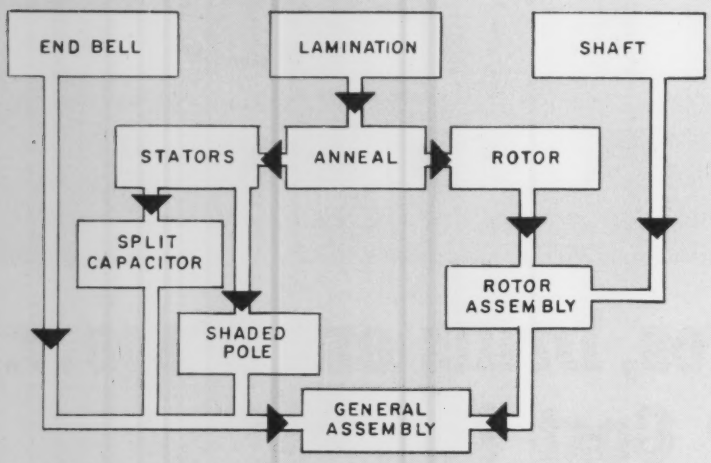
Natcos perform all kinds of drilling, boring, facing and tapping jobs in every conceivable combination and sequence.

Ask the Natco Field Engineer about the newly perfected tape control systems for Natco production tools.

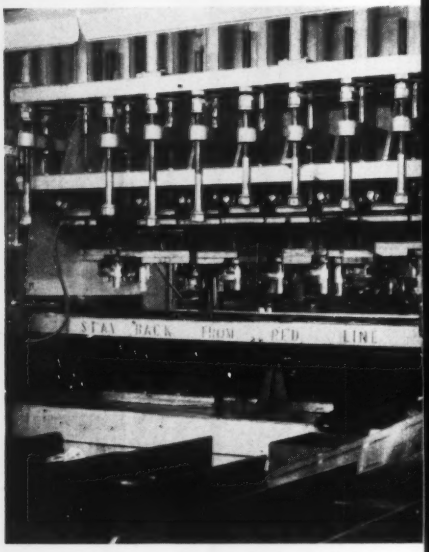
## National Automatic Tool Company, Inc.

*Richmond, Indiana* ***Multi-spindle drilling, boring and tapping machines. Special machines for automatic production. Call Natco Offices in Chicago, Detroit, New York, Buffalo, Philadelphia, Cleveland, Los Angeles; distributors in other cities.***

**PRODUCTION FLOW CHART**




The five major production lines all blend into the general assembly area



Strip is being fed into the multistation transfer press. It forms end bells

# Plant Design Is Flexible

**Two basically different motors (shaded pole and permanent split capacitor types) are manufactured in 30 styles and types. Production is automated**

FLEXIBLE layout has enabled Westinghouse to expand the capacity of its mechanized plant at Upper Sandusky, O., by more than 50 per cent during the two years it has been in production.

Highly automated equipment is coupled with an ample conveyor system. The plant produces motors for direct connected fans and room air conditioners.

**Integrated Design**—Instead of duplicating a motor already on the market, Westinghouse designed one with a new bearing and lubrication system.

Frank E. Heikkila, manager of the division's industrial motor department said: "Since we were starting from scratch, with neither motor design nor plant, we are able to co-ordinate motor and plant design to take full advantage of the most up-to-date manufacturing processes and techniques."

**Production Plan**—Motors are made on five basic lines—end bell, lamination, shaft, stator and rotor.

The major lamination and shaft lines are automatic. The others are highly conveyorized and mechanized.

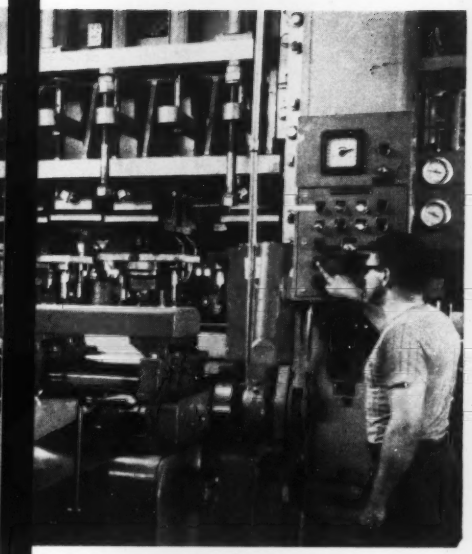
An assembly conveyor which passes the end of each line picks up completed parts. By the time the conveyor passes all lines, each rack contains two complete sets of motor parts, which are ready for final assembly and testing.

**Ends Bells**—Coil stock, 7¼ to 7¾-in. wide, is fed to a 13-station transfer press. The 600-ton machine uses nine stations that blank, form, pierce and trim 25 end bells a minute.

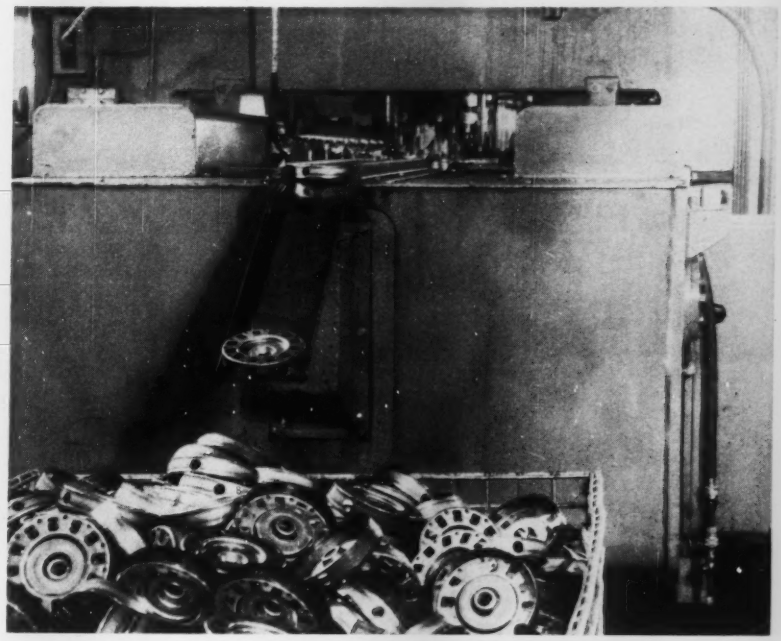
Bearing caps, formed on manually operated progressive presses, are loaded on chain driven hangers with the end bells. They are carried through an automatic washing and drying process to remove die compound and add a phosphate coat for rust protection.

End bells are manually loaded on rotating pedestals where they are painted with lacquer and air dried. Oil and drain holes are drilled in the parts by a semiautomatic pneumatic drill.

Assembly is simplified by a special wicking, bearing assembly and oiling machine. It consists of a hydraulic press, a 12-station indexing table, an automatic oil tube inserting device, two oil measuring and oiling stations and a bearing cap orienting and inserting device.



in nine operations, turning out parts at the rate of 25 a minute



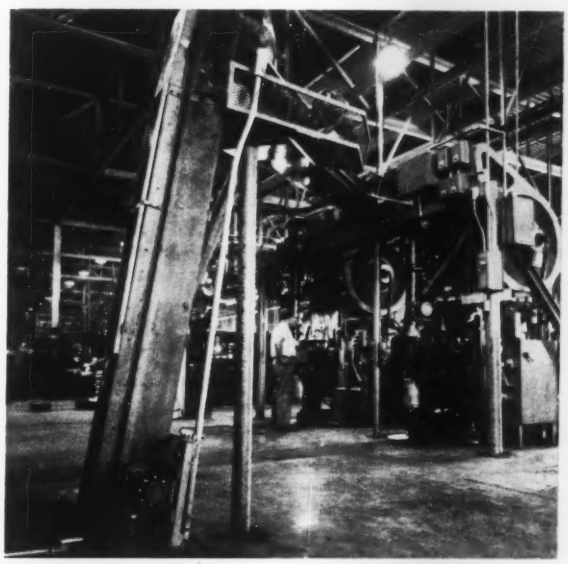
Completed end bells are automatically loaded into crates for transfer to conveyor through the protective painting area

Parts are manually positioned and automatically oiled, assembled and transferred to the grommet inserting and bearing cap staking machines before being transferred to the final assembly conveyor.

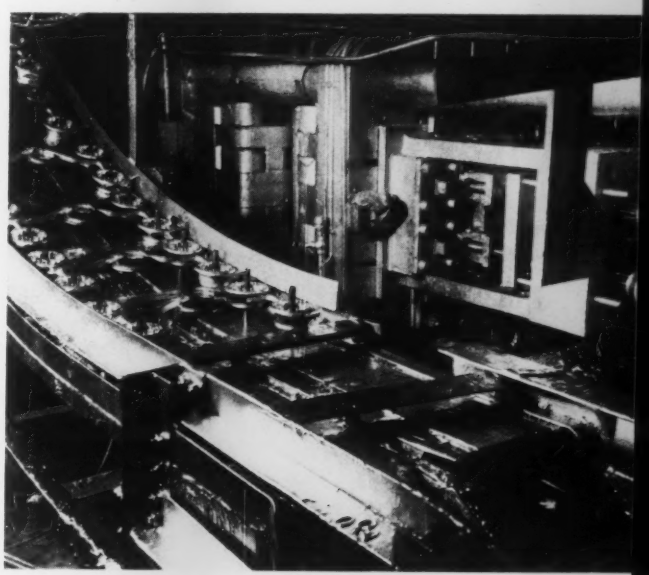
**Laminations**—The only manual step in this process is loading the coil stock onto the de-reeler. The stock, 0.024 x 35¼-in., is fed to a punch press which makes eight blanks (called cookies) per stroke. Its rate is 33 strokes per minute.

Cookies are picked up on a magnetic belt, which is nearly vertical, and transfers them to an overhead conveyor where they are moved to a tube type feeding hopper at the start of the two lamination punching lines.

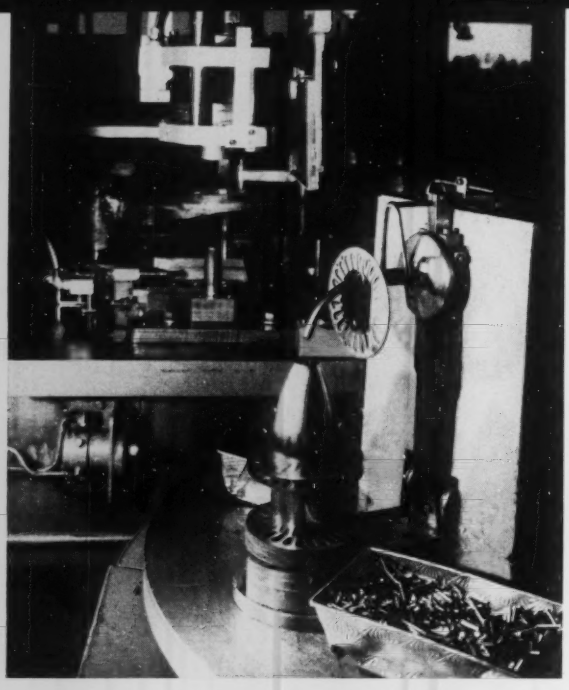
Each line has three presses. The first pierces the rotor punching, the



Cookies from the press are carried up the vertical magnetic belt at left. Overhead conveyors feed them into hoppers at beginning of two lamination lines

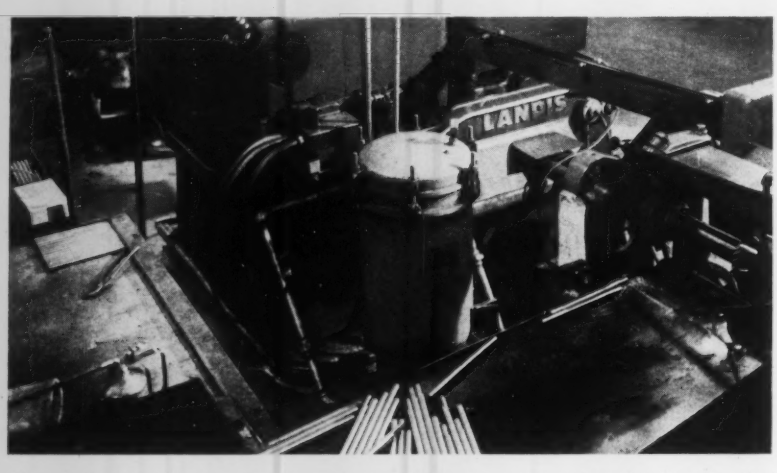


Rotor punchings are being carried out of the diecasting machine. From here they will go to the turning machine which loads, turns and gages parts before postheating



Laminations are oriented automatically by filtering down over rotating bullet shaped arbors

Forms are manually installed on the stator core. Coil is positioned in the chuck of the winding machine. Winding of all four poles is automatic




The shafts are leaving the centerless grinder on a conveyor leading to the straddle mill where flats are added

second separates the rotor and stator; and the third pierces the stator.

When cookies in the hoppers hit a maximum level, the cookie press automatically shuts off until a minimum level is reached. This control of output is also used in the punching lines, with each hopper controlling the press feeding it.

Rotor punchings leaving the second press are transferred by a wire tube and automatically loaded in stainless steel pallets positioned on the annealing furnace conveyor.

Stator punchings leaving the third press are loaded by hand. Every 20 minutes the annealing furnace discharges a pallet and another is admitted automatically.

The 4½-hour annealing cycle is automatic. The controlled atmosphere furnace has stand-by power, which permits idling during non-working shifts.

Underfloor conveyors carry scrap from the cookie and lamination presses to the outside where it is loaded into a truck trailer.

**Rotors**—A stack of rotors on a dummy shaft is conveyed to the diecasting machine. Molten aluminum is manually ladled into a well. The rest of the operation is automatic.

A ram moves in and forces the molten aluminum to all stations of the die. After the metal has chilled, the cores are deposited onto a cooling conveyor.

A hydraulic trimming press automatically strips the diecast rotors.

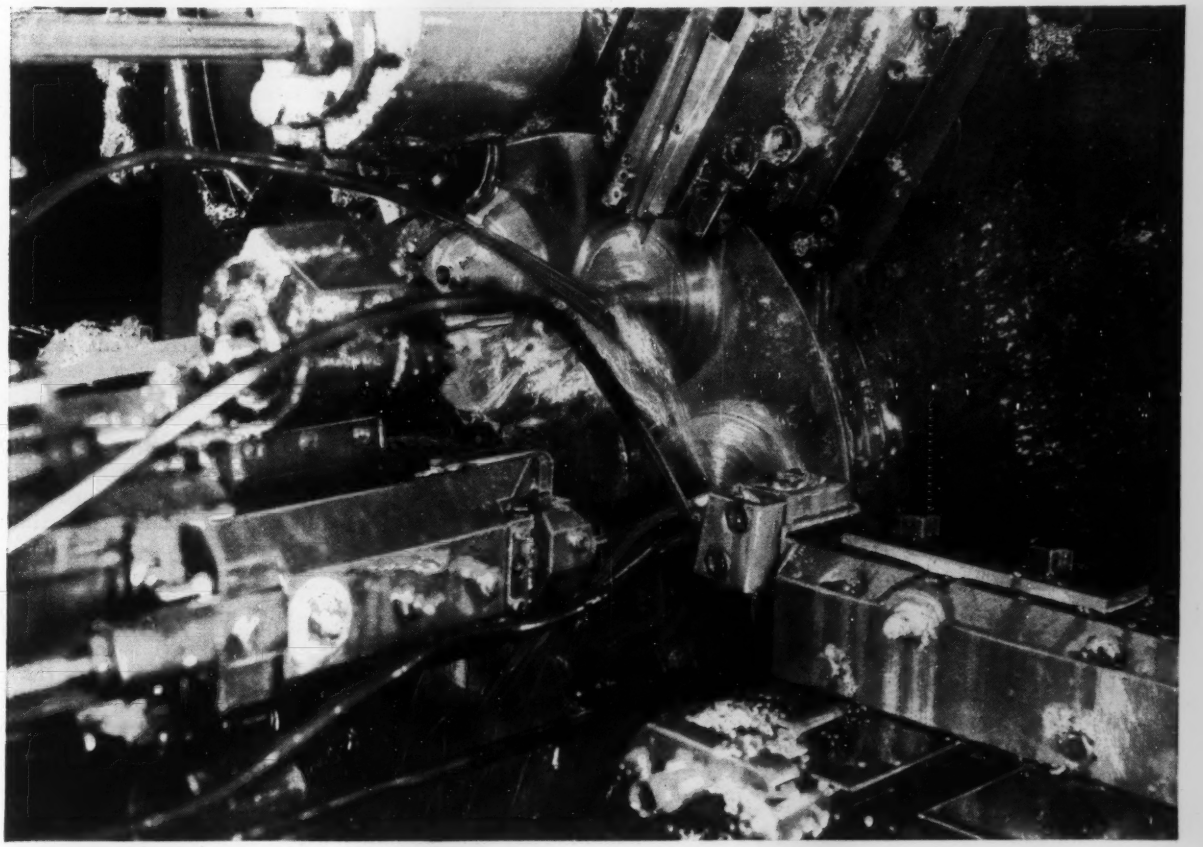
Rotors are automatically fed to a turning machine which loads, turns, gages and transfers the part to the postheat oven.

A circular tool with 48 indexed cutting edges is used in the lathe. If a part gages offsize, the tool automatically advances to a new position.

Rotors are inserted in the oven, cycled and retrieved through the oven with no manual control. The shaft is manually assembled to the rotor and sent to the assembly conveyor.

**Stators**—Stator punchings are assembled into core stacks and measured. The stacks are oriented and riveted together.

To insert slot cells in the permanent split capacitor stator core, the core is manually loaded into an



This 6-spindle 602 New Britain Gridley is cutting SAE 1112 steel . . . with Gulfcut 31C cutting oil. The results are measurable, in terms of longer tool life, fewer rejects, finer finishes.

# They wanted fewer rejects, longer tool life... the answer: GULFCUT

Buswell Metal Products, Inc., of Southington, Conn., keeps 27 automatic screw machines busy turning out precision parts for the aircraft and electronic fields. Their cutting oil: Gulfcut 31C.

Gulfcut 31C provides longer tool life . . . and has helped in reducing rejects to less than $^{2}/_{10}$ of 1%. This sulphurized-mineral-lard oil has outstanding anti-weld properties and load-carrying ability. And it contains sulphur combined in three different forms for maximum chemical activity.

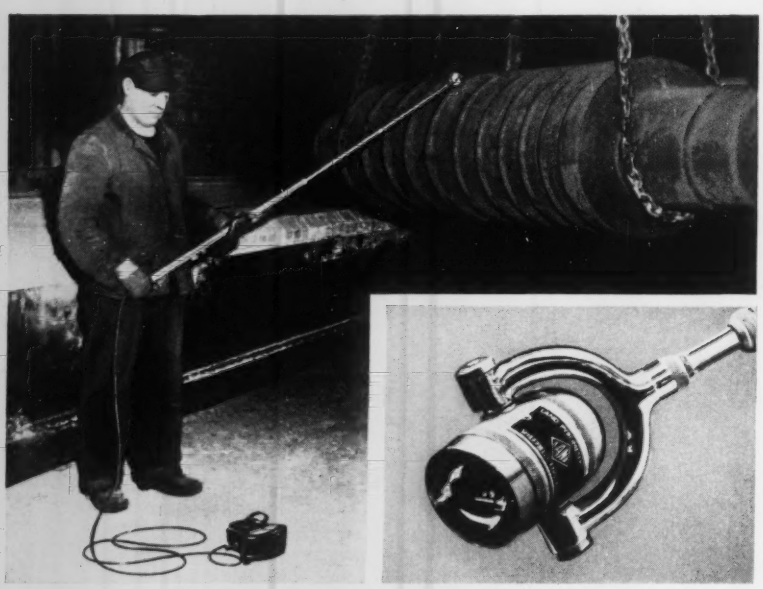
The Gulfcut line includes a cutting oil for *your* specific needs, too. Why not let your Gulf Sales Engineer recommend the right one . . . perhaps cut your costs in a number of ways? Call your nearest Gulf office today!

**Gulf Oil Corporation**
1822 Gulf Building
Pittsburgh 30, Pa.

GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

# Now Check Surface Temperatures to ±0.5% in Only 5 Seconds



New from Fielden, the Land Portable Pyrometer provides direct readings . . . in only 5 seconds . . . of refractory and metal surface temperatures between 100° F. and 2400° F. No emissivity corrections are required, yet this pyrometer is accurate within ±0.5%.

The Land Pyrometer not only transmits radiation under near-perfect black body conditions, but fully compensates for changes in ambient and radiation head temperatures. It also features a telescoping arm and can be used with a rugged Fielden millivoltmeter, spot galvanometer, or portable high-speed indicator or recorder.

WRAP UP TEMPERATURE WITH **Fielden**

*Fielden simplified instrumentation* can solve practically every temperature problem. For measurement you can choose from low-cost voltage or current recorders, null-balance recorders for up to 96 points, manual monitors, automatic scanners, and specialized radiation or suction pyrometers. Fielden controllers range from electric on-off types up to proportional pneumatic controllers. In addition, Fielden supplies a complete line of sensing elements, accessories and supplies.

Send for Literature

Robertshaw-Fulton CONTROLS COMPANY

FIELDEN INSTRUMENT DIVISION

Dept. D, 2920 N. 4th St., Philadelphia 33, Pa.




indexing fixture. The cell is formed from coil, inserted into core slots and cuffed automatically.

The shaded pole inserting machine includes a ten-station indexing table, a copper-coil inserting device, crimping and welding stations.

The stator winding area is divided for the two designs and a complement of winding machines is provided for each. The stator winding is tested for shorts, grounds and opens.

Stators are dipped in a rise-and-fall varnish tank and conveyed through a varnish baking oven. After baking, two lathes turn end bell fits on stator ends. The finished stator is placed on the final assembly conveyor.

**Shafts**—This operation is automatic. A large supply of shaft stock (10-ft lengths) is loaded on an automatic feed mechanism that places the bar in a machine where it is chamfered and cut to correct lengths.

The bar blank passes between two centerless grinders for rough and finish grind. Flats are added at an automatic straddle mill, and the shafts are stored until ready for shrink assembly to the rotor core.

**Final Assembly**—These two lines have three stations each. The conveyor moves between them, directly over the work stations.

One end bell, the rotor and the stator are positioned on a belt driven fixture. The second end bell is added; the leads are fed through the lead hole; and the through bolts are inserted.

A three-headed pneumatic drill inserts the screws. End play is checked, and the assembled motor is placed on the test conveyor.

It is tested for electrical operating characteristics and noise. Dust caps are assembled; the units are sprayed with enamel and cycled through the paint baking oven.

At the end of the baking cycle, the motors are cooled, identifying decals are added and they are packed for shipment.

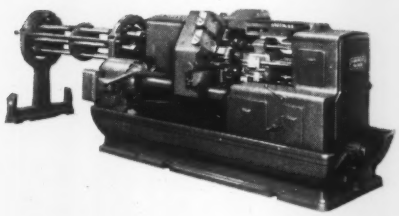
---

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, O.*

## FROM DIESEL ENGINE TO ICE-CREAM FREEZER PARTS

# AUTOMATIC BAR MACHINES

## Handle All Types of Jobs



### SIX AND FOUR-SPINDLE AUTOMATIC BAR MACHINES

**GREENLEE Special Machine Tools**

- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Hydro-Borer Precision Boring Machines

✓ *Efficiently...*
✓ *Economically*

Greenlee design permits the handling of a wide variety of operations at various spindle positions . . . makes it easier to split up long operations . . . reduces idling time.

Threading, tapping and reaming can be performed in 3rd, 4th, 5th and 6th positions . . . a special Greenlee advantage. Seven full-length T-slots on the main tool slide will accommodate the tools and attachments needed for a wide range of set-ups. Interchangeable cross-slide tooling and simplified cross-slide camming contribute to greater flexibility and faster set-ups.

Investigate! Ask any owner or operator . . . they'll tell you that Greenlee is one of the most highly respected names in its field.

***Write for Catalog No. A-405***

**GREENLEE BROS. & CO.**

**1928 MASON AVE.**
**ROCKFORD, ILL.**

(Advertisement)

# SPECIAL REPORTS ON FINISHING NON-FERROUS METALS

## NUMBER I—Decorative, Corrosion-Resistant Finishing with Iridite

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a decorative finish or a good paint base for non-ferrous metals. However, continued developments are so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can combine salable appearance with durability in one finish at a competitive price advantage. Report II on paint base, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, as a basis for this discussion, a "decorative" finish is considered as any chromate film that is used as a final finish in itself. It may be truly decorative in that its sole purpose is to enhance the beauty of the product. For example, a bright chrome-like finish or a pleasing bronze appearance are among the many effects that can be obtained. It may be functionally decorative in that it reduces reflectivity for camouflage purposes or provides a means of color-coding parts. But, in all cases, the Iridite films protect the metal against corrosive attack.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. These films can produce a wide variety of pleasing appearances. The basic colors of the Iridite coatings are grouped below by metals.

ZINC and CADMIUM: Metallic bright, light iridescent, iridescent yellow, bronze, olive drab.

COPPER, BRASS, BRONZE: Metallic bright, yellow.

ALUMINUM ALLOYS: Clear, iridescent yellow, brown.

MAGNESIUM ALLOYS: Light brown, dark brown, black.

SILVER: Metallic bright.

In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

Depending upon the metal and the Iridite used, corrosion resistance of clear and bright films ranges from mild passivity to as high as 500 hours in salt-spray; on heavier dark films, salt-spray resistance ranges from approximately 100 to 1000 hours.

It is this combination of decorative and corrosion resistant properties that accounts for the widening use of Iridite finishes. For example, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, a combination of lustrous chemical polishing of the as-cast surface of zinc die castings and good resistance to corrosion. Further, in many cases, sizeable savings in the cost of buffing and electroplating are realized.

### WHAT IS IRIDITE®?

**Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.**

On many steel parts, a simple system of zinc or cadmium plate and bright Iridite is used instead of more costly electroplated finishes to provide a bright, decorative and protective finish with tremendous savings in material, equipment and labor.

In finishing aluminum, where corrosion resistance or paint adherence is the prime consideration, the aircraft industry has all but abandoned the anodizing process in favor of recently developed chromate conversion coatings, among them Iridite #14 and #14-2 (Al-Coat). These formulations and their method of application can be varied to retain the original metallic appearance while providing acceptable corrosion resistance, or to produce a fully colored brown finish that offers exceptional corrosion protection. Again, time and manpower savings are astounding—one company saved at least $15,000 a year on maintenance of racks alone and another $40,000 on materials and labor in only nine months. In addition, of course, hundreds of thousands of dollars are saved by eliminating the need for expenditures for generators, heating equipment and racks.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to having decorative and protective functions, these chromate coatings form an excellent base for organic finishes and bonding compounds. They have low electrical resistance. Some can be soldered and welded. The Iridite film itself does not affect the dimensional stability of close tolerance parts.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 E. Monument Street, Baltimore 5, Maryland.

## Grinder Uses Two Rams To Reduce Heating

The table of this surface grinder is actuated by two hydraulic rams. Each ram is under pressure only half of the time. When it is not in use, the ram is cooled.

Low pressure (200 psi operating pressure) results is a small hydraulic system. It is easily removed for inspection and maintenance.

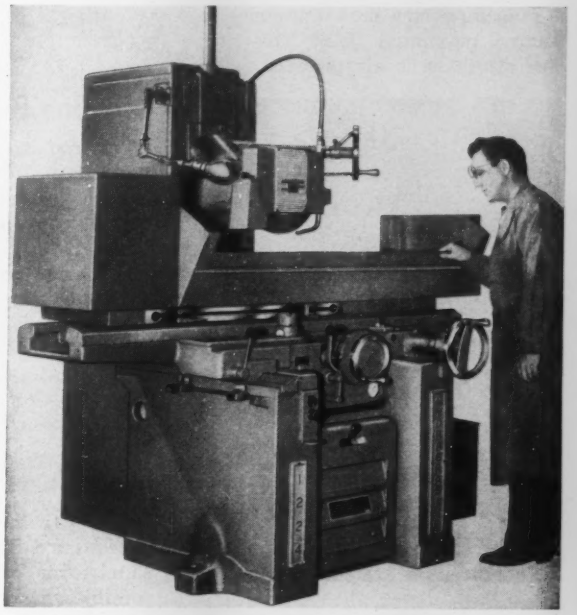
All models (8 x 12 x 24, 12 x 12 x 18 and 12 x 12 x 24 in.) have 12 in. grinding clearance under a 12 in. wheel.

For accurate transverse saddle adjustment, the machines have a ground cross-feed screw with a backlash eliminator and ball bearing saddle ways.

The motor turns the screw for rapid saddle transverse when the wheel is dressed.

Spindles are precision ground and all parts are balanced after assembly. To eliminate binding on the column ways, the head and spindle assembly is balanced on the elevating screw.

All controls are conveniently grouped. They are mechanically interlocked for safety. *Write*: Abrasive Machine Tool Co., Dexter road, East Providence, R. I. *Phone*: Geneva 4-0550



## Magnetic Motor Starter Adjusts To Meet Special Conditions

The NEMA size 0 and 1 starters are 42 per cent smaller than previous open forms. The starters are used on machine tools, pumps, hoists, blowers, saws, compressors and packaging machines.

Turning a knob on each of the two overload relays adjusts the overload trip setting up to ±15 per cent of the heater rating. This meets special requirements such as found in areas with varying temperatures.

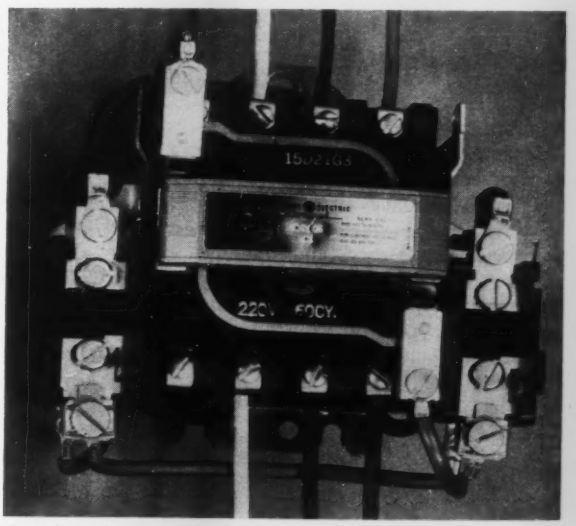
Starter parts are easy to inspect and maintain; they simply snap or slide together. Contacts can be inspected in seconds without using tools.

An improved strongbox coil requires less inrush current and makes possible the use of a lower rated transformer.

The starter can be mounted in any position. Only a screw driver is needed for installation.

All wiring on the unit, including work on interlocks and overload relays, can be done from the front. There is more wiring space even though the unit is smaller than previous models and sides can be removed easily to provide extra wiring space. The enclosure has ten combination knockouts for wiring convenience.

Straight-through wiring speeds installation. Leads go directly to all line terminals at the top and from all load terminals at the bottom. Stranded or solid wire up through size No. 8 can be used.



The open form starter weighs 3 lb. An enclosed form weighs 6 lb. Size 0 is rated up to 5 hp at 440 volts. Size 1 is rated for 10 hp at 440 volts. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211

## NEW PRODUCTS and equipment

### Strapping Tools

Up to 1 ton of tension can be supplied by this stretcher which weighs 8 lb.

It crimps each seal uniformly to assure maximum joint strength. The stretcher is air powered.

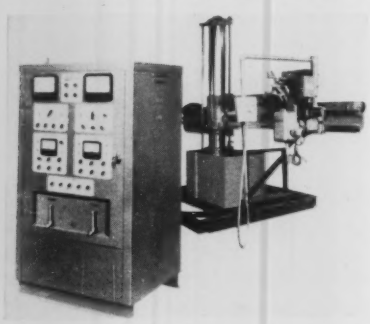
A second model provides up to 3900 lb of tension. It includes a cutter attachment for use with 1¼-in. strapping. *Write*: Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill. *Phones* Armitage 6-8500

### Arc Welding Control

This control station provides all jogging movements, the weld start, emergency stop and manual initiation of current decay.

It can be used with an automatic arc spot welder, timed and automatically sloped, and manual welding with regulated current and automatic slope for crater elimination.

The unit contains the arc power supply, automatic arc length control, wire drive, carriage drive, gas and water controls and the timer sequence.



All electrical apparatus, except the motor, are interwired in the cabinet. *Write*: Weltronic Co., 19500 W. Eight Mile Road, Detroit 19, Mich. *Phone*: Kenwood 2-2800

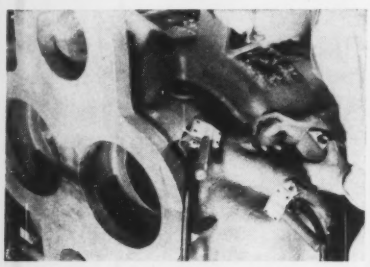
### Welding Rod

This rod is used for all types of joints in stainless steel fabrication and for dissimilar metal joining, including copper, brass and bronze.

The silver bearing alloy is lead free. A self-contained flux permits tinning action and provides control during the joining. *Write*: Technical Information Service, Eutectic Welding Alloys Corp., 40-40 172nd St., Flushing 58, N.Y. *Phone*: Flushing 8-4000

### Magnetic Particle Testing

This attachment enables one man to test parts with magnetic powder. Elimination of the second man is possible since the part will remain in electrical contact with any magnetic surface as long as desired.



A single inspector applies the powder after the leeches have been set in position. *Write*: Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill. *Phone*: Underhill 7-8000

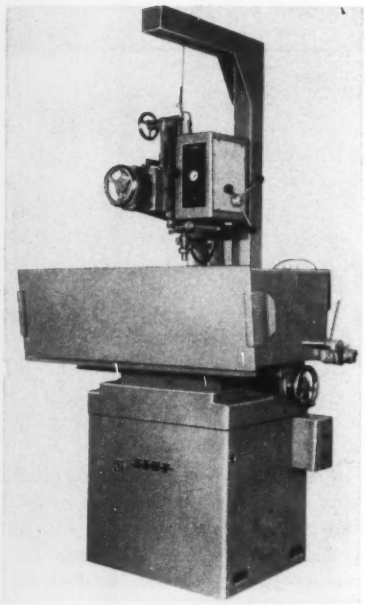
### Die Machining

This apparatus machines any metal regardless of hardness or density. It is used to make dies.

Machining is done by electrical energy. This eliminates burred or feathered edges.

The cutting tools can be machined, forged, extruded from brass or cast from Elo-Met, an alloy developed for the purpose.

Adjustment of the electrode to the workpiece is controlled by longitudinal travel on the table, cross slide travel on the overarm and vertical adjustment on the cross slide assembly.



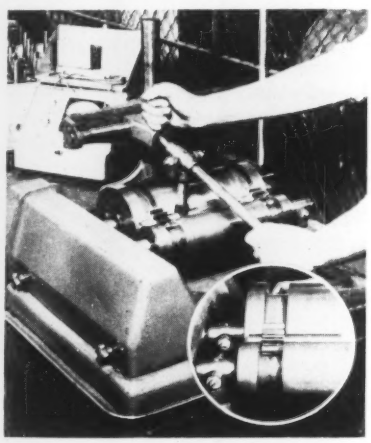
Machining is completely automatic. *Write*: Elox Corp. of Michigan, 1830 N. Stephenson Highway, Royal Oak 3, Mich. *Phone*: Mulberry 9-1921

### Lapping Machine

Contour cutouts are custom-made for this machine used in lapping cylindrical piece parts with shoulders or other angular obstructions.

Instead of balancing each cylindrical piece on the lapping roller, the part is dropped into the correct position for lapping.

Rollers and their sleeve bearings remove as a single unit. They are



# STAINLESS STEEL
## produced the way *you* want it by Carlson

Only at Carlson can you buy so many grades of stainless steel in the wide variety of shapes and sizes illustrated here. We regularly process such complete bill-of-material orders. Trained Carlson men, with years of experience and practical knowledge, are determined to give you the best and most efficient service possible.

***When you need stainless plate . . .***
***Carlson gives you what you want***
***when you want it!***

**Write for CARLSON'S WEEKLY STOCK LIST . . . your guide to what's available in high-quality stainless steel.**

**G.O.CARLSON** *Inc.*
*Stainless Steels Exclusively*
**122 Marshalton Road**
**Thorndale, Pennsylvania**
*District Sales Offices in Principal Cities*

**STAINLESS STEEL PLATE . . .** rolled to almost any size or thickness, 3/16" and heavier, to meet your individual needs—whether rectangles, circles or special patterns. Substantial tonnage in Types 302, 304, 304-L, 309, 309-S, 310, 316, 316-L, 317, 317-L, 321, 347, 348, 405, 410, 430 and 502-½% Mo. is available for prompt delivery. In addition, two precipitation-hardening grades, Types 17-4 PH* and 17-7 PH* are now in production.

**STAINLESS STEEL HEADS . . .** in Types 304, 304-L, 316 and 316-L are available from stock in ASME and Standard specifications (10" to 72" diameter). A large assortment of dies is available for pressing other types of heads and special sizes can be spun where practical.

**STAINLESS STEEL FORGINGS and SPECIAL PATTERNS . . .** including tube sheets, flanges, circles, rings, sketch plates and other specialties can be produced to specification on our versatile equipment.

**Also STAINLESS STEEL BARS AND SHEETS (No. 1 Finish).**

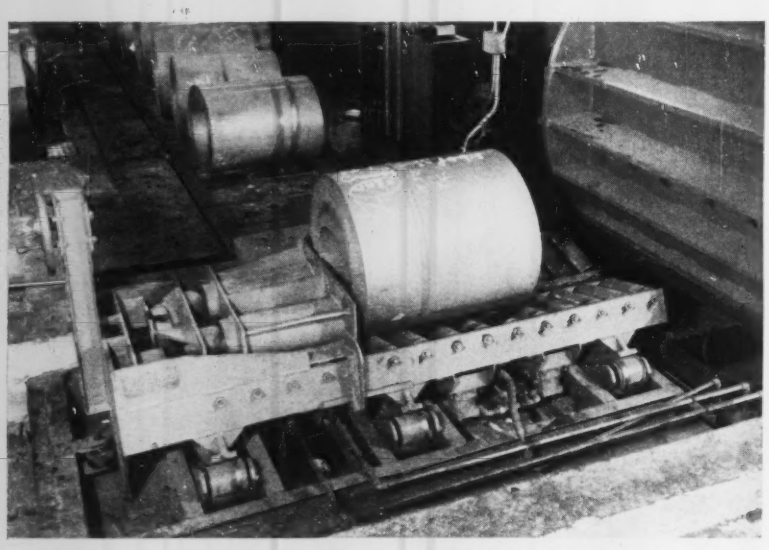
*Trade mark of ARMCO STEEL CORPORATION

**PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)**

look beyond the price . . .

you'll see that you get the most for your money in

MATHEWS CONVEYERS



In this system side tilter discharges coils on to pallet conveyer which leads to processing or coil storage. Down ender in right foreground has returned to receive position.

Most plant operating people, when they buy conveying systems, are looking for the equipment that is best for **their** plant—equipment that is designed to meet their individual requirements. They are looking beyond the price . . . looking to quality—to dependability. Mathews engineers have been designing and building conveying systems for over 50 years, and a great amount of this equipment has been applied in metalworking plants. This is why operating people everywhere have an extra measure of confidence in Mathews equipment—and why you see Mathews Conveyers in metal-producing and fabricating plants everywhere.

MATHEWS CONVEYER COMPANY

GENERAL OFFICES . . . . . ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIV. . . . MATHEWS CONVEYER COMPANY WEST COAST, SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE, ONTARIO.

MATHEWS

*Fifty Years of Leadership in Mechanized Handling*

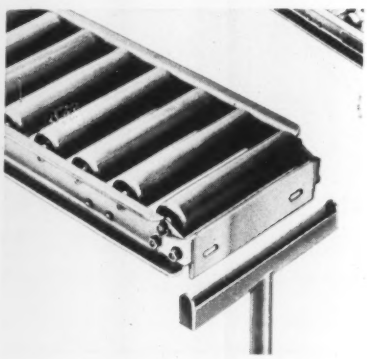
## NEW PRODUCTS and equipment

positioned simply by tightening the setscrews that hold the rollers in place. *Write*: Spitfire Tool Co., 2931 N. Pulaski Road, Chicago 41, Ill. *Phone*: Palisade 5-1610

### Conveyors

Both ends of these conveyor sections are identical and each section is a complete unit. This facilitates setting up and eliminates end-for-end shifting.

The conveyors are equipped with extended end plates. They fit slotted tops of tubular stands forming the coupling unit.

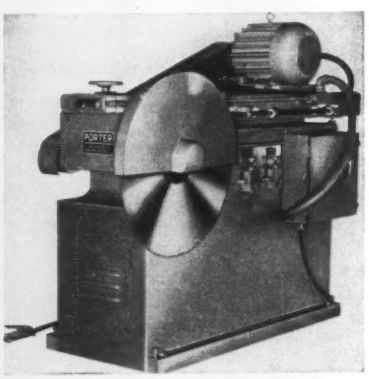


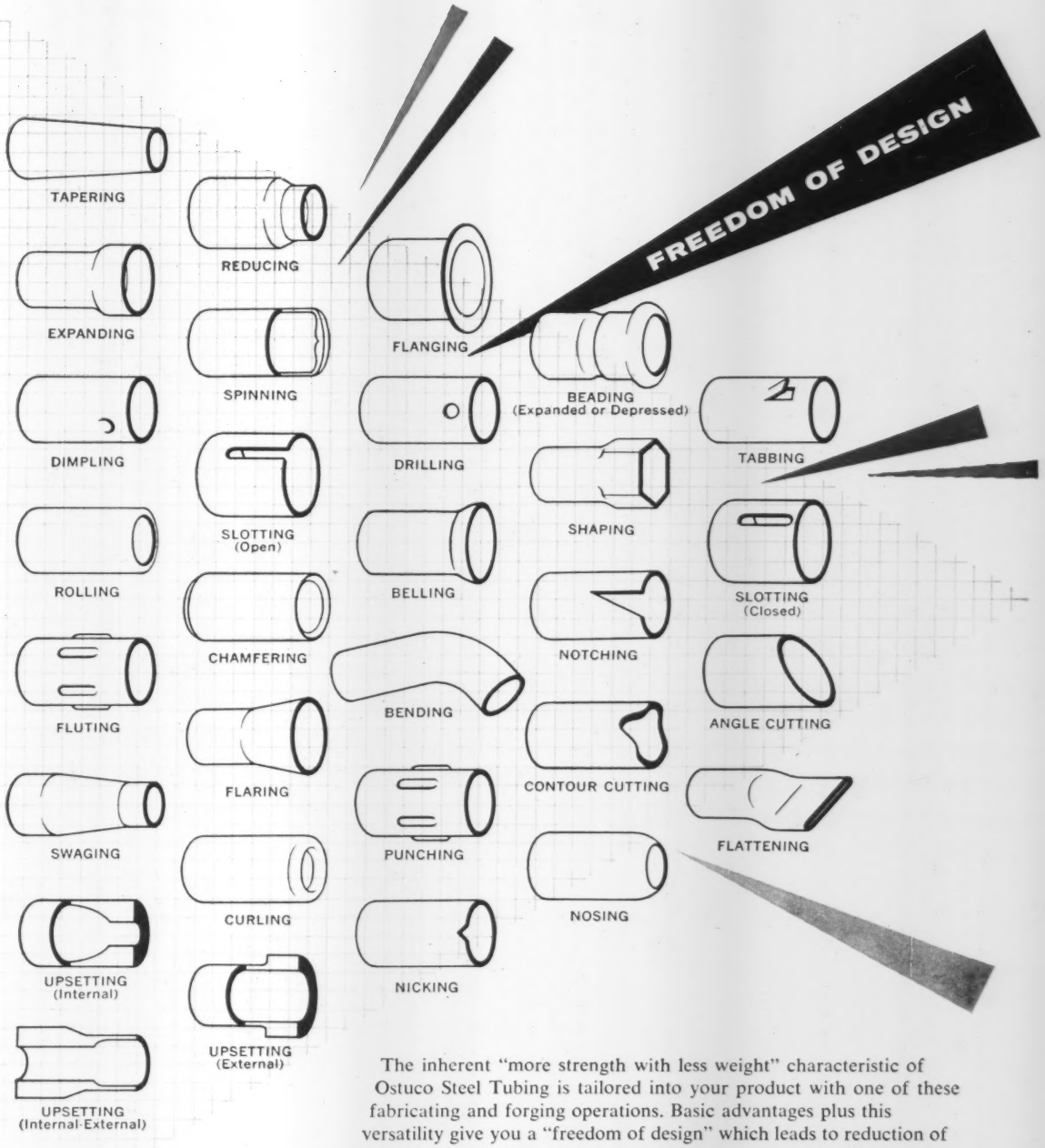
Stands are easily raised or lowered to give the proper conveyor slope. *Write*: E. W. Buschman Co., Clifton and Spring Grove avenues, Cincinnati 32, O. *Phone*: Mulberry 1-1600

### Cutoff Saw

The hydraulically operated carriage is adjustable from zero to 55 ft a minute. Stroke sizes are 24 and 36 in.

The operator positions the stock,






The inherent "more strength with less weight" characteristic of Ostuco Steel Tubing is tailored into your product with one of these fabricating and forging operations. Basic advantages plus this versatility give you a "freedom of design" which leads to reduction of materials, production and labor costs and improvement of your product.

Contact your nearest Ohio Seamless sales office or write direct for full information on Ostuco Seamless or Electric-Resistance Welded Steel Tubing, new NP-60 Steel Tubing (specially processed for machinability), and fabricating and forging facilities available to you.

**OSTUCO TUBING**

MANUFACTURED IN

**SHELBY, OHIO**

EXCLUSIVELY BY

**OHIO SEAMLESS TUBE DIVISION**

OF COPPERWELD STEEL COMPANY

*SHELBY, OHIO • Birthplace of the Seamless Steel Tube Industry in America*

*SEAMLESS AND ELECTRIC-RESISTANCE WELDED STEEL TUBING • FABRICATING • FORGING*

**SALES OFFICES:** *Birmingham • Charlotte • Chicago (Oak Park) Cleveland • Dayton • Denver • Detroit (Ferndale) • Houston Los Angeles (Lynwood) • Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh • Richmond Rochester • Salt Lake City • Seattle • St. Louis • St. Paul St. Petersburg • Tulsa • Wichita*

**CANADA:** *Railway & Power Engr. Corp., Ltd.*

**EXPORT:** *COPPERWELD STEEL INTERNATIONAL COMPANY, 225 Broadway, New York 7, New York*

YOU GET more* WHEN
YOU BUY BEARINGS
FROM YOUR
Bunting®
DISTRIBUTOR

*more dependability

YOU CAN DEPEND ON BUNTING, the Bunting distributor and on Bunting Stock Bronze Bearings and Bars. The very highest standards of metallurgical and manufacturing processes assure uniform high quality in Bunting Cast Bronze and Bunting Sintered Powdered Oil-filled Bronze Bearings and Bars. Bunting distributors are the leading responsible distributors in their respective areas. They carry ample stocks at all times.

Your Bunting distributor is listed in the classified section of your telephone directory usually under Bars—Bronze, and Bearings—Bronze. Two modern Bunting factories and eleven Bunting Branch Warehouses expedite distribution in all areas. Write, or ask for catalogs giving complete dimensional listings and technical data.

Simplified standardized size listing including all ASTM sizes—an exclusive Bunting feature.

Bunting

BUSHINGS, BEARINGS, BARS AND SPECIAL PARTS OF CAST BRONZE AND POWDERED METAL.

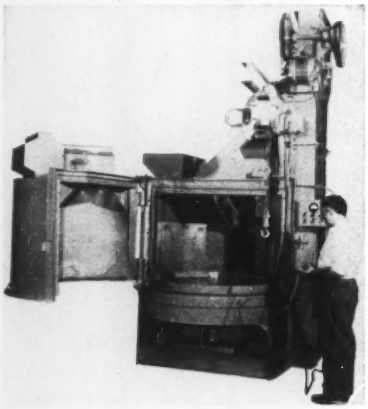
The Bunting Brass and Bronze Company • Toledo 1, Ohio • Branches in Principal Cities

## NEW PRODUCTS and equipment

presses an electrically operated pedal and the blade moves forward on the carriage, makes a cut and returns to position. *Write*: C. O. Porter Machinery Co., Grand Rapids, Mich. *Phone*: Glendale 6-5376

### Cleaning Table

A 10-hp motor throws 15,000 lb of abrasive an hour to clean loads of up to 4000 lb. Castings, forgings and stampings up to 48 in. in diameter and 24 in. high are blasted in the unit.



A single door opens to expose half of the 48 in. rotating worktable.

A self-contained elevator and separator automatically clean used abrasive for recirculation. *Write*: Pangborn Corp., Hagerstown, Md. *Phone*: Hagerstown 3500

### Fire Extinguishers

Portable fire extinguishers (20 and 30 lb capacities) use dry chemicals to form a cloud for smothering fires.

Pressure gages show whether the

units are charged. To operate: Aim the discharge horn at the fire and pull the trigger.

As long as the discharge horn is held in the clip, a small plunger remains depressed to lock the discharge trigger. When the horn is removed the trigger is ready for use. *Write*: Walter Kidde & Co., Belleville, N. J. *Phone*: Plymouth 9-5900

## Electroplating

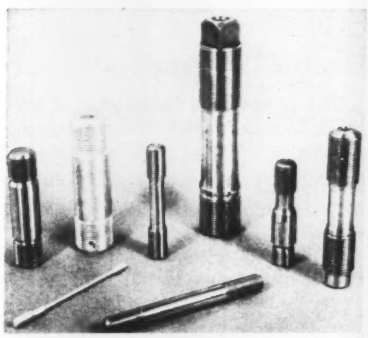
The Enbond "Z" process is for treatment of zinc base diecastings. It produces an active surface for standard copper plating operation. The cleaner and activator are supplied in powder form.

A second process, Enbond "BR," prepares brass and other copper alloys for any type of electrodeposit. *Write*: Enthone Inc., 442 Elm St., New Haven, Conn. *Phone*: Spruce 7-5581

## High Strength Studs

These studs are for use in high temperature and high pressure fastening jobs.

The studs range in size from ½ to 6 in. in diameter and from



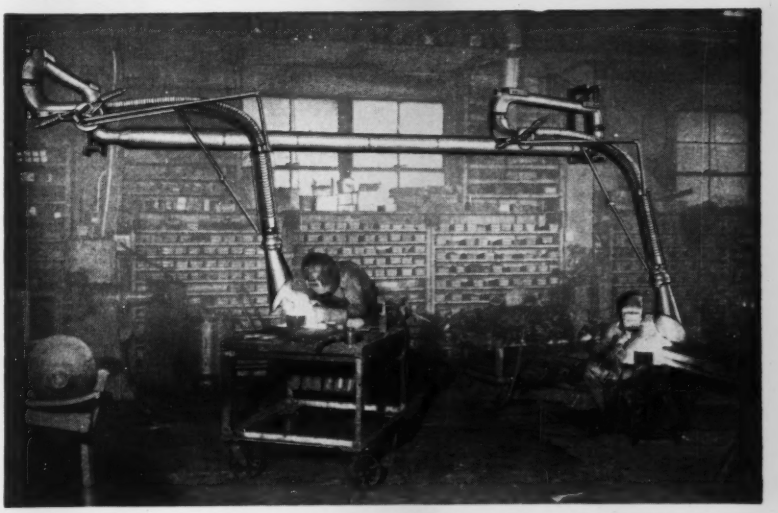
6 to 72 in. in length. They weigh up to 800 lb.

Studs for moderate temperature applications have a tensile strength of up to 220,000 psi. *Write*: Standard Pressed Steel Co., Jenkintown, Pa. *Phone*: Turner 4-7300

## Wire Flattening Mill

Strip ranging from 0.010 in. up and in widths to ⅝-in. is produced by this tandem mill. Each stand

ALL-HYDRAULIC !
SILENT HOIST
KRANE KAR
HYDRAULIC
Boom Swinging
Boom Topping
Boom Telescoping
Load Hoisting
Originator and leader in its class for 30 years, KRANE KAR goes ALL-HYDRAULIC. Affords amazing ease of handling . . . touch control of all crane operations . . . with other engineering advances that simplify operator's work . . . eliminating gear shifting and clutch replacements . . . cutting maintenance to the bone and setting new standards of efficiency and productivity. Get the details. Sold and Serviced by Responsible, Well-Equipped Distributors
FLUID DRIVE
POWER STEERING
MODELS 1000 TO 25,000 LBS. CAP.
SILENT HOIST & CRANE CO.
Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment
849 63rd Street, Brooklyn 20, N. Y.



Keep Plant Air CLEAR of Welding Fumes

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean, healthful atmosphere. Harmful fumes, heat and smoke are eliminated *at their source*, before they have a chance to spread throughout the shop. This lessens fatigue . . . improves working conditions . . . paves the way for increased plant production. Ruemelin Fume Collectors are approved by Industrial Commissions and insurance companies. Thousands in service. Available with 9 ft., 15 ft., 17 ft. and 20 ft. reach. Write for Bulletin No. 37-E.

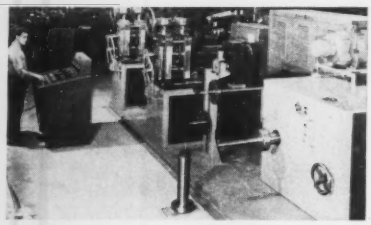
RUEMELIN MFG. CO.
MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A 8755-¼P

has rolls that are 8 in. in diameter and 5 in. wide.

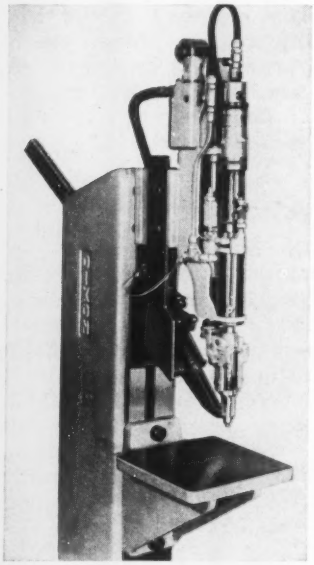
A handwheel worm gear screwdown with a micrometer dial graduated in 0.0001 in. assures accurate pass control. Close width tolerances are maintained by means of a vertical edging unit on the entry side of the second mill stand.

The recoiler is synchronized electrically to provide constant tension and winds coils up to 500 lb. *Write*: Stanat Mfg. Co. Inc., 500 Shames Drive, Westbury, N. Y. *Phone*: Edgewood 4-8700



## Automatic Screw Driver

A sensing device stops this machine if a screw or nut is not properly placed or torqued. It drives screws and nuts up to 5/16-in. thread size at speeds of 60 a minute.

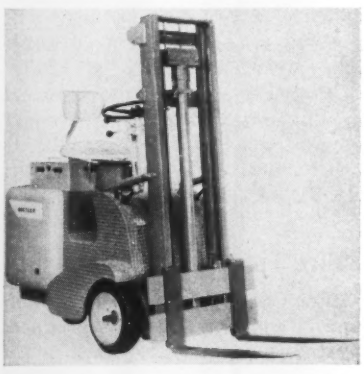


The torque range can be adjusted from 10 to 108 in.-lb. The machine operates at 2000 rpm and has a 3-in. stroke. *Write*: Dixon Automatic Tool Inc., 2300 23rd Ave., Rockford, Ill. *Phone*: 5-8756

## Electric Lift Truck

The power and drive unit of this truck can be replaced by removing six bolts. The unit consists of front wheels, axle, differential, gear reducer, motor and brake assembly.

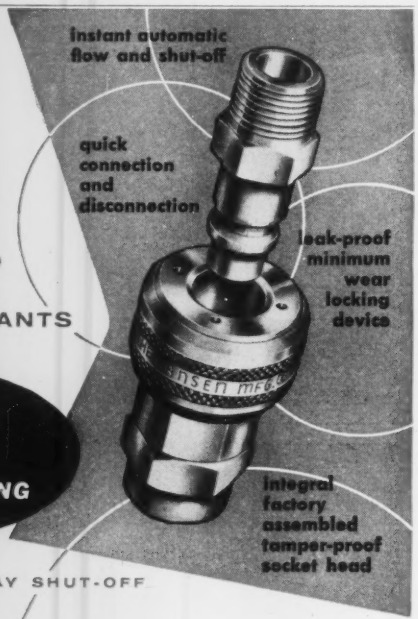
An adjustable pallet fork has a tilt range from 10 degrees back-




Thoroughly Proved...

BY YEARS OF HARD EVERYDAY USE IN THOUSANDS OF PLANTS

HANSEN
QUICK-CONNECTIVE
PUSH-TITE COUPLING


instant automatic flow and shut-off
quick connection and disconnection
leak-proof minimum wear locking device
integral factory assembled tamper-proof socket head

ONE-WAY SHUT-OFF

Locking pins in Hansen Push-Tite Coupling Socket afford large area contact with Plug, thereby preventing wear and subsequent leakage.

The ability of Hansen Push-Tite Couplings to withstand severe service—with practically no maintenance—has been thoroughly proved by years of hard, everyday use in thousands of plants. The "socket head", which contains the locking device, is factory assembled into a rugged integral unit which cannot be readily injured or have component parts lost by casual tampering.

To connect the Coupling, you merely push the Plug into the Socket with one hand. Flow is instantaneous. To disconnect, push back sleeve on Socket—Coupling disconnects. Flow is shut off instantly and automatically.

QUICK-CONNECTIVE FLUID LINE COUPLINGS for
AIR • OIL • GREASE
HYDRAULIC FLUIDS • WATER
VACUUM • STEAM • OXYGEN
ACETYLENE • REFRIGERANTS
GASOLINE • COOLANTS

WRITE FOR THE HANSEN CATALOG

Here's an always ready reference when you want information on couplings in a hurry. Lists complete range of sizes and types of Hansen Quick-Connective Couplings. Write for your copy.

Representatives in Principal Cities

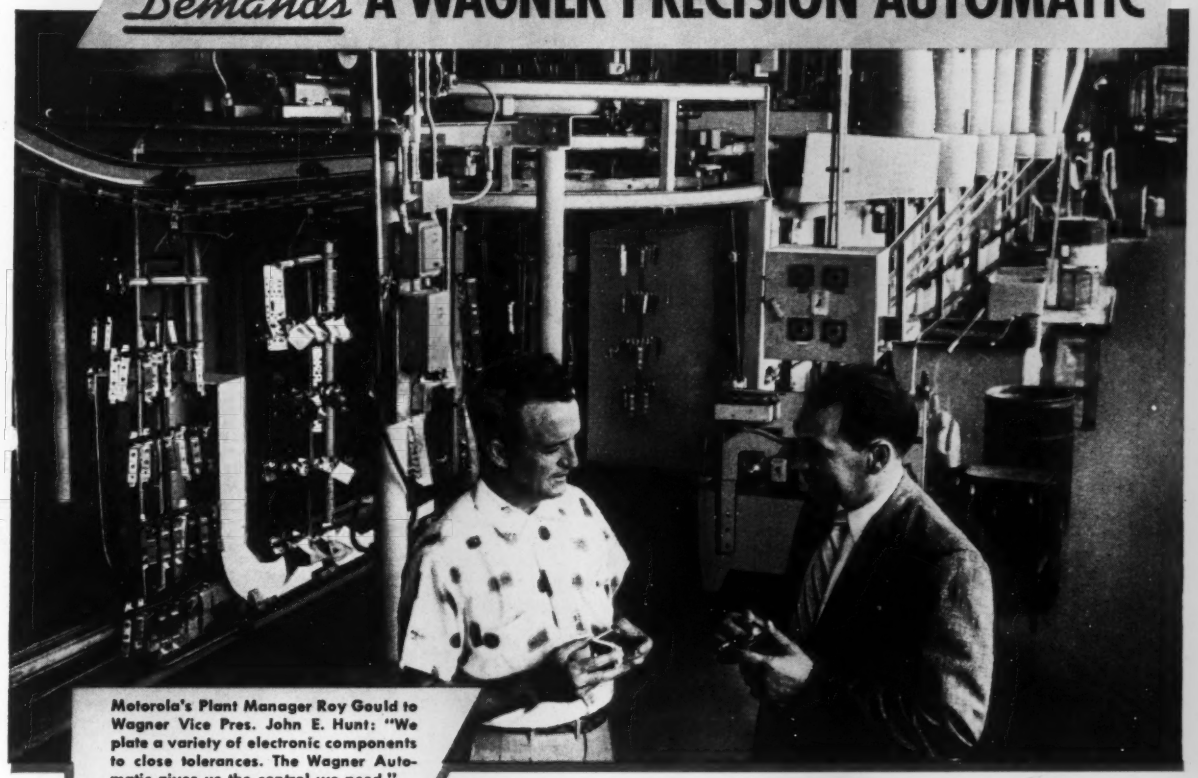
SINCE 1915 QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 11, OHIO

# MOTOROLA'S PRECISION PLATING

## *Demands* A WAGNER PRECISION AUTOMATIC



Motorola's Plant Manager Roy Gould to Wagner Vice Pres. John E. Hunt: "We plate a variety of electronic components to close tolerances. The Wagner Automatic gives us the control we need."

Television and other electronic components are cadmium plated to specifications much more rigid than most military parts. That's why Motorola, Inc., after an intensive study of all makes of automatic plating machines in the plants of its suppliers and many other manufacturers, specified a Wagner Automatic for their critical work, a deposit of .0003″ +.000075″ —0″. This precision plating machine, designed to solve Motorola's problems but using many standard components, now produces 95% of the requirements of the Communication and Industrial Electronics Division, proof of the versatility of Wagner design and engineering.

Plant Manager Roy Gould says, "Only the Wagner Automatic offers all the features desired, in addition to the greatest output per hour of the quality plating we demand. We like the smoothness of lift and transfer, the absence of impact, the elimination of a tremendous superstructure, and the foolproof hydraulic system. The simplicity of design and the standardization of parts and assemblies enable our mechanics to handle all adjustments and maintenance. The installation was fast—and the Wagner men performed their company's contractual and unspoken obligations competently and without hesitation. Since the first week or two of running, only minor adjustments have been needed."

Remember, only Wagner manufactures the equipment and processes the chemicals required by your plant. For information on Wagner automatic plating machines and materials handling engineering services, write today or call our representative in your area.

MANUFACTURERS AND PROCESSORS OF ALL METAL-FINISHING CHEMICALS, ANODES, AND EQUIPMENT

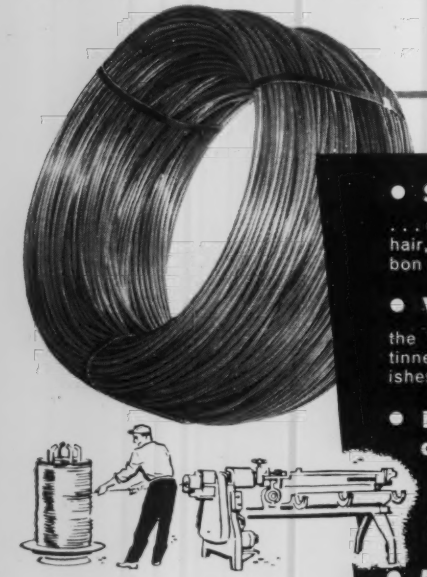
**400 MIDLAND AVE., DETROIT 3, MICHIGAN**

CHICAGO • CINCINNATI • CLEVELAND • INDIANAPOLIS • NEW YORK • ROCHESTER • GRAND RAPIDS

Wagner BROTHERS INC.

# WIRE

**BACKED BY A HALF CENTURY OF EXPERIENCE**



- **Sizes up to 9/16"...**
  . . . down to almost the size of a human hair, in low carbon and medium low carbon steels.
- **Wire of many finishes**
  the right wire for the job—coppered, tinned, bright, galvanized and other finishes to fit your production needs.
- **Better forming and workability**
  Continental Wire is available in almost any temper and analysis in low and medium low carbon steels for your particular forming jobs.
- **Metallurgical service**
  Thousands of case histories provide unsurpassed resources for developing a practical solution to your wire problems.

**ECONO-COIL**—Reduces scrap loss up to 90 percent. Saves material handling time. The Econo-Coil gives you continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gage through ½" diameter. Shipped on returnable Econo-Coil pallets.

**LEVERPAK**—Mechanizes your wire handling, protects wire against moisture, dirt and handling damage. LEVERPAK permits long uninterrupted runs of 500# to 650#, depending on wire sizes. Saves scrap, downtime, stores easily.

**SPECIAL SHAPES**—D-shaped, V-shaped, oval, half-oval, half-round, square, rectangular, triangular, keystone-shaped and others. Saves fabricating and machining costs.

Chances are you have a problem right now that we can help you solve—with Wire. Call us.

# CONTINENTAL

**STEEL CORPORATION • KOKOMO, INDIANA**

**Wire Specialists for over Half a Century**

PRODUCERS OF Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.


## NEW PRODUCTS and equipment

ward to 3 degrees forward. Mast height is a minimum of 60 in.

The model has 1000, 2000 and 3000 lb capacities. *Write*: Hustler Corp., Elm road, Willoughby, O.

### Magnets

These magnets (57 and 66 in. in diameter) permit field replacement of worn pole shoes.

Welds may be ground or chipped off by an air hammer for removal of the spool and coil. *Write*: Square D Co., 4500 Lee Road, Cleveland 28, O. *Phone*: Ludlow 1-1800

### Hot Spray Units

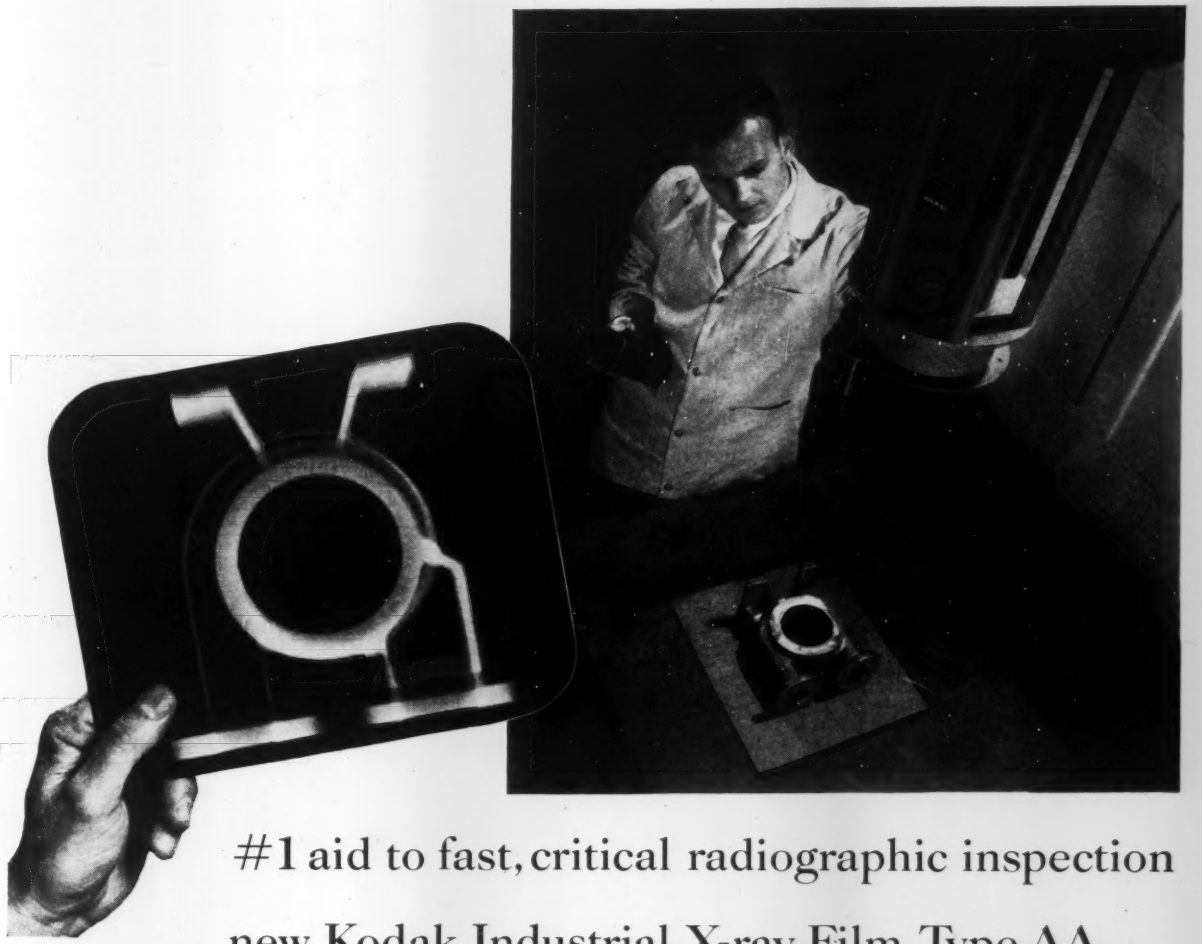
The operator can select paint temperature by setting the controller. The unit provides hot spray for one or two guns on hose lines up to 75 ft long.

A hot spray heater and reciprocating pump are combined in a portable unit which carries the original 5 or 10-gallon container. *Write*: Spee-Flo Co., 720 Polk, Houston, Tex. *Phone*: Capitol 5-0461

### Cradle and Straightener

Material up to 16 in. in width and coils with an OD of 48 in. can be handled with this machine.

The straightener has eight rolls



# #1 aid to fast, critical radiographic inspection

# ...new Kodak Industrial X-ray Film, Type AA

TODAY'S radiographic inspections call for increased sensitivity, greater speed. And these are the characteristics of Kodak's newest industrial x-ray film, Kodak Industrial X-ray Film, Type AA.

This film retains all the excellent qualities that made Kodak Type A the most widely used x-ray film in industry. Then, in addition, it provides greatly increased speed.

This permits exposure time to be cut as much as 50%. It allows adjustment of the radiographic factors to obtain greater contrast and easier readability.

Kodak X-ray Film, Type AA can multiply your minutes—can extend the usefulness of your present radiographic equipment.

Find out all the ways it can improve your production. Get in touch with your x-ray dealer or Kodak Technical Representative.

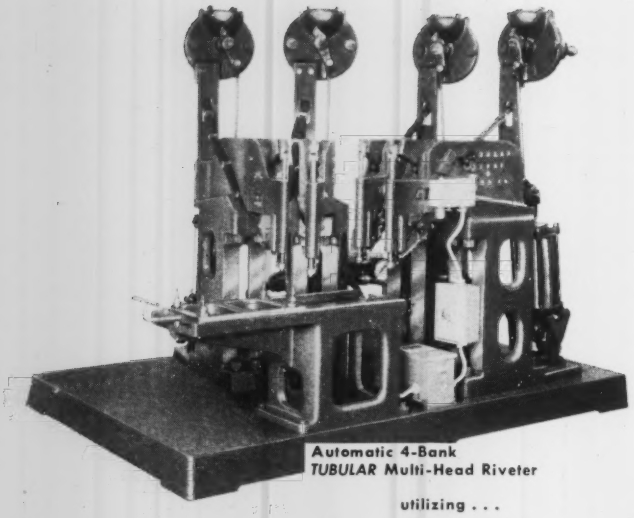
**EASTMAN KODAK COMPANY**
**X-ray Division Rochester 4, N. Y.**

## Read what the new Kodak Industrial X-ray Film, Type AA, does for you:

- Reduces exposure time—speeds up routine examinations.
- Provides increased radiographic sensitivity through higher densities with established exposure and processing technics.
- Gives greater subject contrast, more detail and easier readability when established exposure times are used with reduced kilovoltage.
- Shortens processing cycle with existing exposure technics.
- Reduces the possibility of pressure desensitization under the usual shop conditions of use.

Kodak

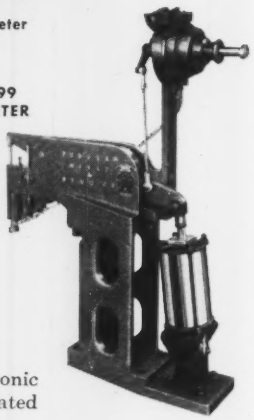
***Kodak Industrial X-ray Film, Type AA and Type M is now available in 100-sheet boxes wrapped without interleaving paper. Designated as AA-100; M-100.***



Automatic 4-Bank
*TUBULAR* Multi-Head Riveter

utilizing . . .

Basic Model 99
*TUBULAR* RIVETER



# fastening automation...

## "the *Tubular* way"

Volume production of furniture, auto parts, electronic assemblies, appliances, toys, etc. can be fully automated — when you fasten "the ***Tubular*** Way."

***Tubular's*** Basic Model 99 Riveter can be ganged up in banks of 3 or *more* machines. With its modular design, a mass production ***Tubular*** Multi-Head Setting Machine can be engineered for your own volume assembly. You can then fasten *several rivets* — of *different types* — in *several planes* — in *different locations* — all in *one operation*. Assembly *savings* as high as 50-75% can be made.

Here are the *savings* and *advantages* gained by one manufacturer with his ***Tubular*** Multi-Head Riveter:

- 1 ***Tubular*** Multi-Head Riveter in two banks of 5 and 6 each replaced 8 conventional machines.
- Operators required reduced from 8 to 2.
- Automatic rivet settings increased from 8 to 11, with only 2 operators.

- Production increased 60%, from 250 to 400 units.
- Rearrangement of Basic Machines is easily accomplished, protecting original investment.
- Work-holding fixtures, adjustments in anvil elevations, etc. can be engineered for special applications.

To see how you can reduce costs and increase assembly production, call the nearest ***Tubular*** Rivet Engineer — or send blueprints direct to us. With ***Tubular's*** Multi-Head Riveting Machines, mass production possibilities are unlimited.

***Tubular Rivet***
**& STUD COMPANY**
WOLLASTON (QUINCY) 70, MASS.

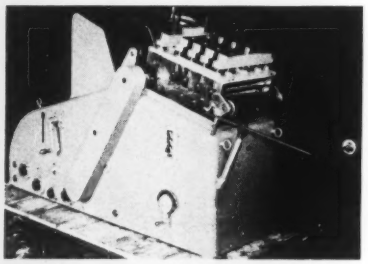
FASTEN AUTOMATICALLY
BETTER and FASTER
with TUBULAR'S RIVETS
and MACHINES

MIDWEST OFFICE & WAREHOUSE — CHICAGO

BRANCH OFFICES: BUFFALO • CHARLOTTE • DALLAS • DETROIT • INDIANAPOLIS
LOS ANGELES • NASHVILLE • NEW YORK CITY • PHILADELPHIA • ST. LOUIS
SAN FRANCISCO • SEATTLE

*See your local classified directory for phone numbers*


## NEW PRODUCTS and equipment

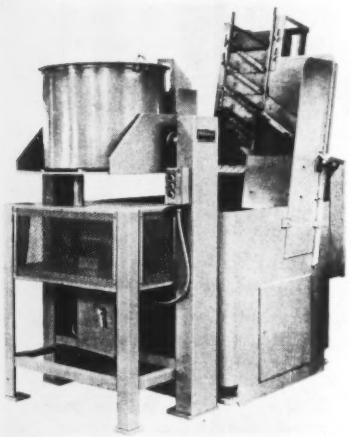


(lower four are power driven). The cradle has four power driven rest rolls, one idler rest roll and one bumper roll.

This unit is equipped with a 3-hp variable speed motor. *Write*: U.S. Tool Co. Inc., Ampere (East Orange), N.J. *Phone*: Orange 5-4000

### Elevating Feeder

Automatic movement of parts from a barrel conveyor line into machines is provided by this machine. It can feed both rolling and sliding parts.



The angle of elevation, depth of conveyor cleats and right or left-hand power takeoff may be varied to handle different parts. *Write*: Feedall Inc., 38399 Pelton Road, Willoughby, O. *Phone*: Willoughby 2-8100

### Punch Card Control

Machine tool, multiple valve and programming control are possible with this punch card system.

A punch card signal with a binary code directly assigns a position to a control motor which has

a position-to-binary follow-up device.

When a desired formula is to be run, the card is inserted in the reader. It simultaneously sets the desired feed rates of all components. *Write*: Graham Transmissions Inc., Menomonee Falls, Wis. *Phone*: Menomonee Falls 3600

## Overhead Crane Kit

This kit contains two truck frames, four crane trolleys and all necessary bolts and fittings. The crane beam and the angle end stops are supplied by the user. The crane is assembled with simple hand tools.

The trolleys are adjustable to permit their use on many runway sizes. Trolley wheels are furnished for either tapered or flat flanged beams. *Write*: Becker Crane & Conveyor Co., 4900 Ridge Road, Cleveland 9, O. *Phone*: Shadyside 9-2733

## Milling Cutters

Replaceable milling cutters for sawing and cutting narrow slots are made in any diameter from 3 to 24 in. and in widths from 3/16 to ¾-in.

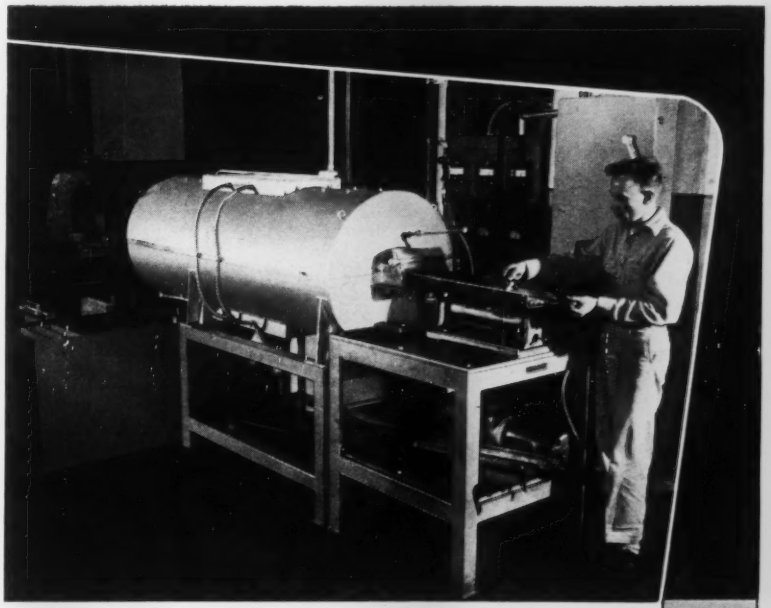
Ground blade faces and ample chip room give a free-cutting action. *Write*: Apex Tool & Cutter Co., Shelton 13, Conn. *Phone*: Regent 4-5244

## Burners for Hot Air

This burner is for use with preheated air up to 1200°F. Its internal parts are made with high temperature alloys. The body of the burner is refractory lined.

Heavy oil is atomized by the use of steam or compressed air. The burners can be supplied with internal or external mixing atomizers. Both are retractable for protection during gas firing.

All burner parts can be removed from the back without disconnecting the burner from the furnace

**Quality carbonitriding of small parts with a Hevi-Duty**

**SHAKER HEARTH FURNACE**

Allen-Bradley uses this Hevi-Duty Furnace for carbonitriding stampings, springs, cams, and rollers. Norman Hetzel, heat-treat foreman, says, "This Hevi-Duty Shaker Hearth Furnace represents a modern technique in heat-treating that is consistent with Allen-Bradley's policy of using the best new equipment in the manufacture of quality products."

Improved quality of parts results from the combination of superior design features, a proper atmosphere in the furnace chamber and a direct oil quench.

Uniformity of Case Depth is obtained by simple regulation of time cycle and temperature.

Labor Costs are reduced by the ease of operation and elimination of pickling after heat treating.

*To find out how you can put this modern production furnace to work for you, write for Bulletin 850A.*

**HEVI-DUTY ELECTRIC COMPANY**

MILWAUKEE 1, WISCONSIN

*Heat Treating Furnaces... Electric Exclusively*

*Dry Type Transformers* *Constant Current Regulators*

or hot air pipe. *Write*: North American Mfg. Co., 4455 E. 71st St., Cleveland 5, O. *Phone*: Broadway 1-6000

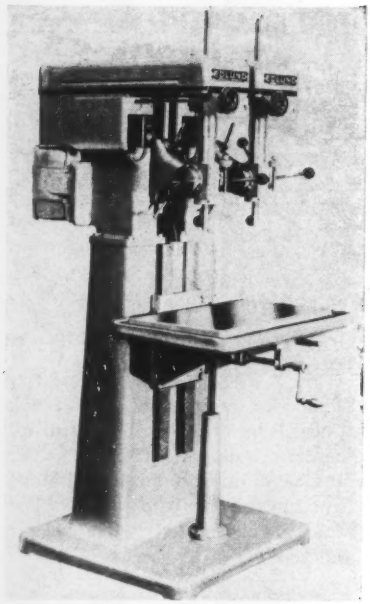
## Rope Carries Signals

In addition to transmitting force for hoisting and other material handling operations, this steel wire rope can transmit continuous communication instructions through copper wire conductors imbedded in its fiber core.

The rope (sizes ¾ to 2 in. in diameter) has a breaking strength of 42,840 to 320,000 lb. *Write*: American Chain & Cable Co. Inc., 929 Connecticut Ave., Bridgeport 2, Conn. *Phone*: 7313

## Drilling Machine

Machines with one to six spindles and speeds ranging from 625 to



10,000 rpm use a 10 in. overhang to make small parts and assemblies.

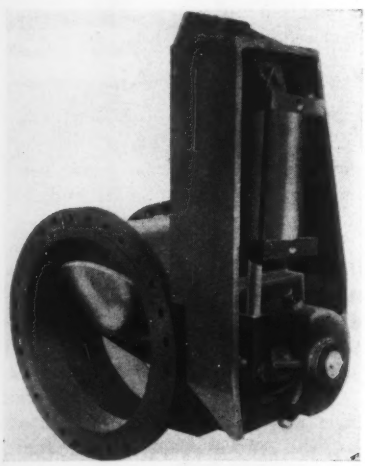
Positive control of speeds is obtained by setting a knob on the upper column. Exact speed is shown in the indicator window. *Write*: Edlund Machinery Co., Cortland, N. Y. *Phone*: Skyline 6-5661

## Butterfly Valves

These valves (sizes, 6 to 96 in.) are equipped with removable seats of synthetic or natural rubber.

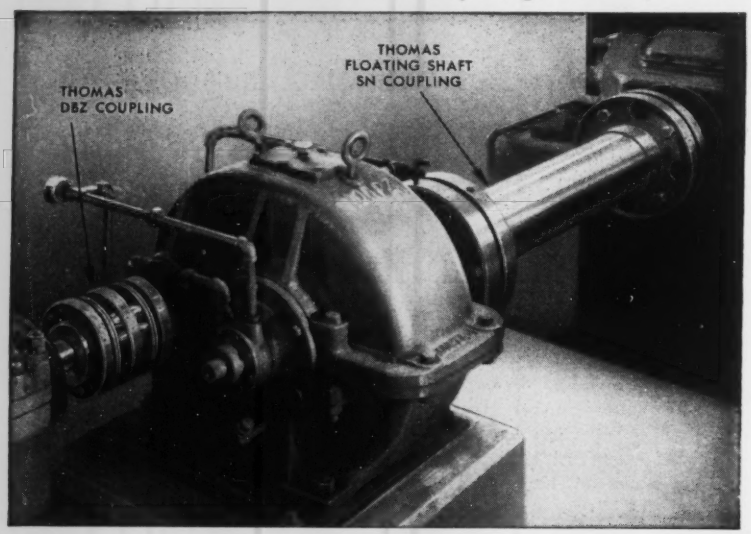
The shaft is a one-piece unit, extending completely through the disc. The valve uses sleeve type self-lubricating bronze bearings.

Operation can be manual or automatic. *Write*: S. P. Kinney Engineers Inc., 201 Second Ave., Carnegie, Pa. *Phone*: Browning 6-4600




# THOMAS FLEXIBLE COUPLINGS

**Give You Freedom From Coupling Maintenance**




**NO LUBRICATION NO MAINTENANCE NO WEARING PARTS**

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Couplings should last a lifetime.

**Under Load and Misalignment only Thomas Flexible Couplings offer all these advantages:**

1 Freedom from Backlash Torsional Rigidity
2 Free End Float
3 Smooth Continuous Drive with Constant Rotational Velocity
4 Visual Inspection While in Operation
5 Original Balance for Life
6 No Lubrication
7 No Wearing Parts
8 No Maintenance

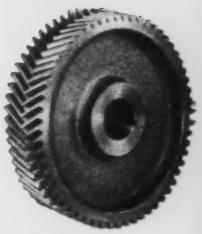
*Write for Engineering Catalog 51A*

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

# Wherever Power is on the move . . .

## INDUSTRY DEPENDS ON ILLINOIS GEAR

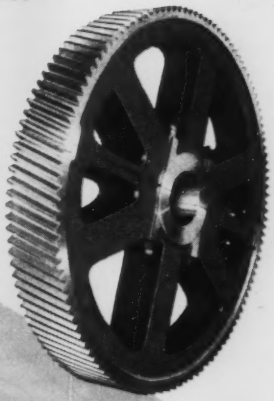
Throughout the world . . . wherever power is on the move . . . ILLINOIS GEARS are *delivering this power* dependably year in and year out.

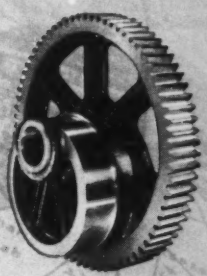


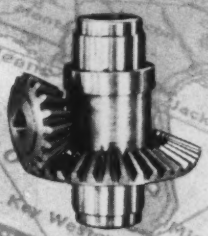
Whether it is in machine tools, steel mills, cement mills, paper mills, chemical plants, construction equipment . . . machinery of any kind . . . this dependability, proven by performance, means true economy that has resulted in enduring customer satisfaction.

When you need gears—remember this: ILLINOIS GEAR manufactures *the most complete line of quality gears in the world.*

You can specify and buy ILLINOIS GEARS *with confidence and assurance* that they will more than satisfy your most exacting requirements.







*Look for this mark* ILLINOIS GEARS® *the symbol on finer gears*

ILLINOIS GEARS Reg. U.S. Pat. Off.

*Gears for Every Purpose* ... one gear or 10,000 or more

# ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE CHICAGO 35, ILLINOIS

# NEW literature

Write directly to the company for a copy

### Systems Engineering

The fundamentals and reasons for draft control are discussed in this 16-page bulletin. Interlocked controls and safety devices are explained. Cleveland Fuel Equipment Co., 1111 Brookpark Road, Cleveland 9, O.

### Steel Shelving

A built-in shelf-locking device is explained in this 4-page bulletin. Standard Pressed Steel Co., Box 579, Jenkintown, Pa.

### Wall Chart

Decimal equivalents are shown on this 16 x 23 in. wall chart. It is printed in three colors. John Hassall Inc., Westbury, N. Y.

### Metal Sheet Feeders

This 7-page bulletin describes 16 attachments for metal sheet feeders. Magnetic hold-up rolls and a brake for preventing elevator drift are among items covered. Dexter Folder Co., Pearl River, N. Y.

### Tracer Lathes

Bulletin H 150, 8 pages, describes the use of tracer lathes. Cincinnati Lathe & Tool Co., Cincinnati 9, O.

### Plastic Pipe

Flow charts, installation instructions, pipe characteristics and fields of application for polyvinyl chloride pipe are given in this 12-page bulletin. Alpha Plastics Inc., 78 Okner Parkway, Livingston, N. J.

### Industrial Trucks

This 12-page bulletin describes trucks and attachments for various applications. Hyster Co., 2902 N.E. Clackamas St., Portland 8, Oreg.

### Tools

Engineering information for tool design is included in this 56-page catalog. It shows the correct quick change holder for different types of standard metalworking machines. Beaver Tool & Engineering Corp., 500 W. County Road, Gaylord, Mich.

### Self-Lubricating Bearings

Descriptions of these bearings made by powder metallurgy are given in a 6-page bulletin. Johnson Bronze Co., New Castle, Pa.

### Wire

Low carbon coarse wire, high carbon fine and specialty wire, low carbon fine and specialty wire and flat and shaped wire are described in this 72-page catalog. Colorado Fuel & Iron Corp., 575 Madison Ave., New York, N. Y.

### Compressors

Construction details, engineering application data and dimensions of centrifugal compressors for gas processing work are given in this 24-page bulletin, C 83. Cooper-Bessemer Corp., Mt. Vernon, O.

### Drying Agent

The use of molecular sieves as drying agents for gases is described this bulletin, 20 pages. Tables and charts contain engineering data for preliminary designs of low dew point drying systems. Linde Co., division of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.

### Coremaking

Bulletin 42, 6 pages, describes the design and performance of a core blower and core shooter. Redford Iron & Equipment Co., 20733 Glendale, Detroit 23, Mich.

### Drafting Machines

Equipment for the draftsman is described in this 12-page bulletin. Unitech Corp., 50 Colfax Ave., Clifton, N. J.

### Plug Valve Lubricants

Lubricant recommendations for 4000 service conditions of lubricated plug valves are included in a 16-page bulletin, reference book 39, section 5A. Homestead Valve Mfg. Co., Coraopolis, Pa.

### 20,000-Lb Fork Truck

Specifications, operating characteristics and features of this truck are given in a 6-page brochure. Clark Equipment Co., Battle Creek, Mich.

### Diameter Calibrator

This standard screw gage will calibrate wood and machine screws through size 12 and all round diameters graduated by sixteenths from 1/16 to ¼-in. in diameter. Dayton Rogers Mfg. Co., Minneapolis 7, Minn.

### Water Treatment

Case histories in bulletin WDC, 2 pages, show how water treatment reduces hard deposits, congestion and corrosion in dust collectors. North American Mogul Products Co., Standard Bldg., Cleveland 13, O.

### Abrasive Wheels

Bulletin GC 57 illustrates different types of cutoff wheels. Electro Refractories & Abrasives Corp., 344 Delaware Ave., Buffalo 2, N. Y.

### Motor Drives

Dimensional, accessory and modification information is contained in this bulletin, M-571. Reeves Pulley Co., division of Reliance Electric & Engineering Co., 1225 7th St., Columbus, Ind.

### Heavy Transformers

Regulation curves, construction features and dimensions of transformers in standard sizes from 0.050 to 5 kva are given in bulletin 300, 4 pages. Hevi-Duty Electric Co., Milwaukee 1, Wis.

### Heat Treating

Heat treating fixtures including retorts, baskets, and tanks are described in this 16-page bulletin M-7. Wiretex Mfg. Co., 10 Mason St., Bridgeport, Conn.

## NEW BOOKS

1957 *Canadian Trade Index,* Canadian Manufacturers' Association, 1404 Montreal Trust Bldg., 67 Yonge St., Toronto 1, Ont. 1087 pages, $10.

Over 10,000 manufacturing firms are listed in this directory. A special section discusses exports. A complete listing of manufacturers and products is included.

*Machining and Grinding of Gray and Nodular (Ductile) Cast Irons,* Norman Zlatin and Charles F. Walton, Gray Iron Founders' Society Inc., 930 National City-E. Sixth Bldg., Cleveland, O. 57 pages, $3.

A reference on machining and abrasive finishing, this manual presents recommended practice feeds and speeds. It includes chapters on selection of tool materials, grinding cutting tools, machining applications, machining properties and types of grinding.

*Compilation of Steel Piping Materials,* American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. 455 pages, $4.50.

Sixty specifications of piping materials are included in this volume. They may be used to plan systems for handling hot liquids under pressure. Topics covered include pipes; boiler, superheater and miscellaneous tubes; steel tubes; heat exchanger and condenser tubes.

# For better service to you Jessop acquires Green River Steel Corporation

Green River Steel Corporation of Owensboro, Kentucky, one of the newest alloy steel plants in the country, now is a wholly-owned subsidiary of Jessop Steel Company. This fact will result in benefits to the customers of both companies. If you buy steel from Jessop, you have been buying the broadest variety of top quality alloy, high-speed and stainless steels obtainable anywhere. Now with the splendid new and modern melting facilities of Green River in the picture, service from Jessop will be broader and quicker. If you are a Green River customer, you'll enjoy higher quality and more products and the benefits of the exclusive Dornin Process used by Green River which provides steel of unmatched forging qualities and grain structure. If you haven't been buying from either company, this is a good time to start. Write to Jessop.

These Jessop district offices and representatives can now service you with Green River Products

District Offices
- Birmingham, Ala.
- Chicago, Ill.
- Cincinnati, Ohio
- Cleveland, Ohio
- Detroit, Mich.
- Hartford, Conn.
- Indianapolis, Ind.
- Los Angeles, Cal.
- New York, N.Y.
- Philadelphia, Pa.
- Pittsburgh, Pa.
- Toronto, Canada
- Wallaceburg, Canada
- Washington, D.C.

Representatives
- Charlotte, N.C.
- Kansas City, Mo.
- Milwaukee, Wis.
- St. Louis, Mo.
- Utica, N.Y.

# JESSOP

STEEL COMPANY • WASHINGTON, PA.

OFFICES IN PRINCIPAL CITIES

Jessop Steel of Canada Limited, Wallaceburg, Toronto

Jessop Steel International Corp., Chrysler Building, New York, New York

# STEEL MEN!

*Corhart melting-end bridgewall, in tank described below, after 21 months and 6 days of service . . .*

## WHAT IS A "CORHART BALANCED FURNACE"?

THE term "Corhart Balanced Unit" does not signify a new or unusual design of glass furnace. It is used to describe *your* furnace, just as it stands, except with the more vulnerable parts *fortified* with Corhart Electrocast to that point where *all* parts of the tank—from dog-house to bottom—wear out evenly, each part delivering its full potential of life and service.

The cost of Corhart Electrocast is higher *per ton* of blocks, but analyses of cost and results in many units prove beyond question that it is by far the most economical refractory *per ton of glass produced.* Glass factory profits are determined by the cost of *finished ware* and NOT by the cost of the tank blocks.

The following is a typical example of many actual records:

| | CORHART BALANCED TANK | CLAY TANK (AVE. OF 5 FIRES) |
|---|---|---|
| Cost, labor and materials | $11,100.00 | $8,000.00 |
| Life (days) | 648 | 289 |
| Tons of glass produced | 22,087 | 7,274 |
| Tank cost per day | $17.12 | $27.70 |
| Tank cost per ton of glass produced | $0.503 | $1.10 |
| Melting area | 18 x 32 | 18 x 32 |

With the outlook for large tonnage demand and the desirability of continuous operation, such economies as these cannot long be ignored. Corhart Electrocast is the answer to the crying demand for a better glass furnace construction material and proof of economy. *Address:* Corhart Refractories Co., *Incorporated,* 16th & Lee Sts., Louisville, Ky.

**CORHART ELECTROCAST REFRACTORIES**

HERE'S an ad of ours that appeared 24 years ago, back when only a few of the most progressive glass manufacturers would use Corhart Electrocast Refractory —"one of the world's highest-priced refractories". Today, however, Corhart Electrocast Refractories are used extensively throughout the world . . .

**In 1957, Corhart 104 is still relatively new in the steel industry. It is also "one of the world's highest-priced refractories". Yet it offers open-hearth furnace operators the same opportunities for greater production and lower costs that Corhart Electrocast brought to glass manufacturers.**

May we tell you the whole Corhart 104 story? Address: Corhart Refractories Co., *Incorporated,* 1642 West Lee Street, Louisville 10, Kentucky, U.S.A. SPring 8-4471.

QUALITY · ECONOMY · ENDURANCE

# CORHART 104
## ELECTROCAST
## REFRACTORY

The words "Corhart" and "Electrocast" are registered Trade Marks which indicate manufacture by Corhart Refractories Company, *Incorporated.* Corhart Refractories Co., *Incorporated,* 1602 West Lee Street, Louisville 10, Kentucky, U.S.A.—Telephone SPring 8-4471

# Market Outlook

STEEL buying is on the upturn. August order volume is bettering that of July, and prospects are promising that substantial tonnage for September (and later) delivery will be placed before the end of this month. The improvement is apparent in practically all products.

**OPENING BOOKS**—Producers of sheared plates and heavy shapes are booked full for this quarter. Sellers of bars, sheets and strip can still offer tonnage for August and September shipments. Mills generally are opening their books for fourth quarter tonnage.

**OPTIMISM PREVAILS**—Most product markets figure to see a pickup in order volume by late third quarter. Sheet mills report the trend in sales is favorable; at some points, demand for cold-rolled sheets is topping that for hot rolled, a decided switch from the recent buying pattern.

**LOOK TO AUTOS**—Sheetmakers are pinning their hopes on large-scale buying for 1958 model cars. Current purchases are in small lots for the completion of 1957 model runs. This month should see auto builders beginning to enter the market for volume tonnage.

**APPLIANCES LAG**—No improvement is noted in demand from the appliance manufacturers. Some observers think demand may be delayed until a month or so after the auto spurt starts. Buying interest is expected to be stimulated then by lengthening deliveries.

**WIRE SLUGGISH**—There is little improvement in merchant and manufacturers wire. Merchant volume has been disappointing all year. In part, this is due to intensive foreign competition—some imported products undersell the domestic market $20 to $30 a ton.

**LEVELING OUT**—Structural steel business is leveling out after declining several weeks. Fabricators are competing sharply for new work in an effort to bolster their sagging backlogs. Settlement of the cement strike will put new life into reinforcing steel demand.

**TONNAGE DOWN**—Bookings of fabricated structurals in the first half were off 21 per cent from those in the like 1956 period. The total was 1,724,752 tons, against 2,176,848. At 220,025 tons, June bookings were the lightest for the period.

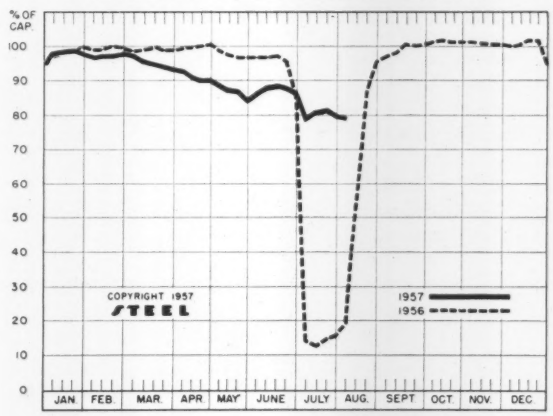
**BARS MORE ACTIVE**—Steel bar business is slowly moving out of its summer doldrums. Producers don't count on much improvement this month but think September will witness a definite rise in order volume.

**JOBBERS HOPEFUL**—July order volume on the warehouse level was down but not as much as had been expected. The distributors are confident their August business will rise in step with the resumption of operations at manufacturing plants closed for vacations.

**PRODUCTION**—Steelmaking operations slipped another ½-point last week. The estimated ingot rate was 79 per cent of capacity. For the past month or so, production has been hovering in the 78-81 per cent range.

**PRICES**—The steel price adjustment is about completed. Impact of the advances is reflected in durable finished goods. Last week, an implement maker raised its prices 7 per cent. STEEL's index on steel scrap is up $.50 to $54.50.

## NATIONAL STEELWORKS OPERATIONS




## DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

| | Week Ended Aug. 4 | Change | Same Week 1956 | Same Week 1955 |
|---|---|---|---|---|
| Pittsburgh | 85 | + 2.5* | 2 | 94 |
| Chicago | 85.5 | + 3* | 8 | 91 |
| Mid-Atlantic | 85.5 | — 2.5 | 25 | 93 |
| Youngstown | 77 | 0 | 5 | 95 |
| Wheeling | 72 | + 1.5 | 54.5 | 97.5 |
| Cleveland | 77.5 | + 1.5* | 0 | 96.5 |
| Buffalo | 88 | — 2 | 0 | 105 |
| Birmingham | 85.5 | — 2 | 3.5 | 21 |
| New England | 48 | — 7 | 77 | 83 |
| Cincinnati | 66 | + 4* | 78.5 | 85 |
| St. Louis | 87 | + 8 | 103 | 103.5 |
| Detroit | 91 | + 2.5* | 48 | 86.5 |
| Western | 99 | — 1 | 30 | 102 |
| National Rate | 79 | — 0.5 | 19.5 | 90 |

## INGOT PRODUCTION‡

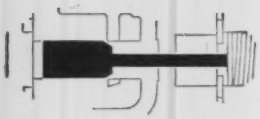
| | Week Ended Aug. 4 | Week Ago | Month Ago | Year Ago |
|---|---|---|---|---|
| INDEX (1947-1949=100) | 130.9† | 126.6 | 125.1 | 25.8 |
| NET TONS (In thousands) | 2,103† | 2,033 | 2,009 | 415 |

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.

Metalworking Outlook—p. 49

Technical Outlook—p. 87

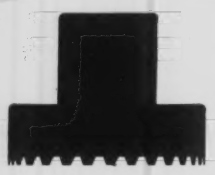
# Here's a liftable idea for you in



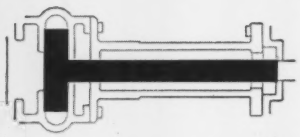
Piston for hydraulic control valve

One-piece bevel gear and shaft

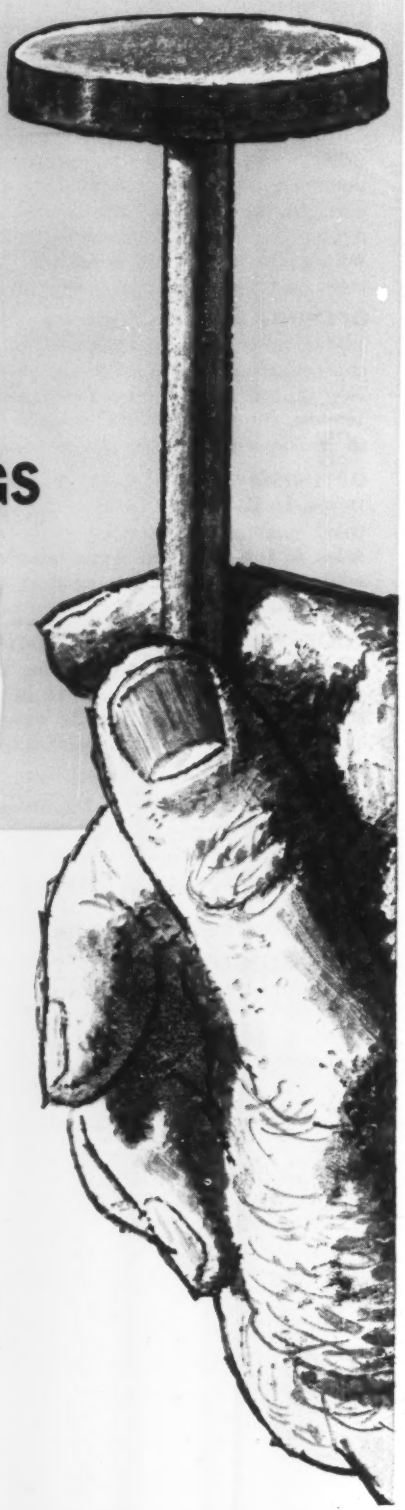
# LARGE-HEAD STEEL FORGINGS



Spline-toothed coupling and shaft



Integral pump gear and shaft



A one-piece steel forging is probably the cost-reducing answer to many a part you now make by assembling a shaft to a thick disk or by costly machining from expensive bar stock. Above are sketched some ideas of uses for large-head steel forgings made by the Valve Division.

Advantages of one-piece extruded forgings over your present two-piece assemblies include:

Elimination of fitting and assembly,
Continuous grain structure around neck,
Only one part to machine,
Reduction in costly machining,
Elimination of costly scrap generation,
Improved structural strength,
No loosening of head on shaft.

Interested? Then let us send a Valve Division engineer to discuss the mechanics and economics of switching to large-head forgings. They are made in the same Valve Division plant that has produced over 1 billion large-head forgings as engine valves for all leading truck, automobile, aircraft, and industrial-engine builders. Write to Department ST-157 at the address below.

**Valve Division** *Thompson Products, Inc.*

1455 EAST 185th STREET • CLEVELAND 10, OHIO

| CURRENT INVENTORIES | | | | |
|---|---|---|---|---|
| UNDER 10 DAYS | 10-30 DAYS | 30-60 DAYS | 60-90 DAYS | 3-6 MONTHS |
| 3% | 22% | 45% | 21% | 9% |
| 5% | 23% | 39% | 27% | 6% |
| 6% | 9% | 48% | 23% | 14% |
| 11% | 7% | 49% | 18% | 15% |
| 14% | 16% | 40% | 19% | 11% |
| 11% | 14% | 50% | 22% | 3% |
| 11% | 25% | 43% | 21% | — |
| 9% | 15% | 46% | 27% | 3% |

## Buyers Forecast 4th Qtr. Inventories

| MILL PRODUCTS | LOWER | SAME | HIGHER |
|---|---|---|---|
| HOT-ROLLED CARBON BARS | 22% | 73% | 5% |
| COLD-FINISHED BARS | 23% | 73% | 4% |
| H & C-R SHEETS, STRIP | 34% | 58% | 8% |
| LIGHT PLATES | 27% | 62% | 11% |
| HEAVY PLATES | 19% | 64% | 17% |
| STRUCTURAL SHAPES | 17% | 72% | 11% |
| COPPER & BRASS | 11% | 85% | 4% |
| ALUMINUM | 19% | 78% | 3% |

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR shows how most respondents reported.

# Deliveries Are Good, Say Metal Buyers

**But some report continuing trouble with wide flange beams and heavy plate. Inventories of most products remain at 30 to 60 days. Nonferrous buyers are cautious**

ALTHOUGH structurals and heavy plates remain in short supply, the news about metal inventories is good. Ninety-six per cent of the respondents to STEEL's quarterly survey report that deliveries are adequate.

Structural shapes, especially wide flange beams, continue to give purchasing agents trouble. In STEEL's previous survey (May 6, p. 127), 14 per cent of the buyers reported difficulty in obtaining structurals; now, 17 per cent voice this complaint. Says one Virginia user: "We are still on strict allocation from mill sources. Owing to competitive pressure on prices, we can no longer buy from non-mill sources."

**Heavy Plates Ease**—In the last 90 days, the percentage of respondents indicating trouble with heavy plate deliveries declined from 20 to 14. Half the buyers have 30 to 60 day stocks (see chart), just as they did three months ago. But the situation isn't static. Eleven per cent moved into this range from the 10 to 30 day category, while 11 per cent moved out of the 30-60 range and into a 60 to 90 day position.

As the chart indicates, most fabricators have 30 to 60 day inventories of mill products. They've maintained stocks at this level since the last quarter of 1956, when they were able to replenish supplies depleted during the strike. A slight movement toward higher stocks can be detected in the report that 25 per cent of the buyers have average inventories of 60 to 90 days. Three months ago, 20 per cent reported such inventories.

**No Changes Seen**—Buyers seem to be well satisfied with present inventories: 70 per cent expect no changes in the fourth quarter. In the previous survey, 56 per cent forecast no changes.

Stocks of sheets and strip, both hot rolled and cold rolled, are considered excessive by 10 per cent of the purchasing agents. Higher-than-desired inventories are also reported for: Hot-rolled carbon bars (7 per cent); seamless tubing (5 per cent); cold-finished bars (3 per cent); and light plates (3 per cent). To the question, when do stocks become excessive, 46 per cent of the buyers reply: "When they reach the 60 to 90 day level."

**Nonferrous Hedging**—While 21 per cent of STEEL's survey participants expected to reduce their copper and brass inventories three months ago, 56 per cent did so between April and July. The explanation lies in continued price

breaks. In aluminum, too, cutbacks were more widespread than anticipated. Thirty-one per cent of the users trimmed stocks after April, although only 20 per cent had predicted such action.

## Sheets, Strip . . .

Sheet & Strip Prices, Pages 148 & 149

In May, shipments of steel shipping barrels and drums (3,115,078 units) were 3 per cent above the April movement and 14 per cent below that in May, 1956, reports the U.S. Bureau of the Census. Shipments for the first five months totaled 15,085,521 units, compared with 16,207,940 in the like 1956 period.

The movement of steel pails in May amounted to 7,068,313 units, 8 per cent above April shipments but 5 per cent below those reported for May a year ago. The movement in the first five months was 31,309,551 units, against 33,412,186 in the corresponding period of last year.

While sheet steel sellers still have tonnage available for shipment this month and are a little discouraged because August business is not coming up to earlier expectations, they are cheered over the marked gain in orders for September delivery. There is improvement in auto tonnage and miscellaneous needs, reflecting the passing of the summer doldrums and reduced consumer inventories. The demand for cold-rolled sheets is topping that for hot rolled.

Opening of mill order books for fourth quarter tonnage is adding a bit to sales volume, particularly in some specialties. It is still too early for buying for that period to reach volume proportions. Sheet demand for September, though, has been so promising that some producers have curtailed their offerings of strip-plate—it had been coming from their continuous mills for some time. Rolling time was open because of the lag in sheet requirements.

Sheet users have been eating into their stockpiles for some time. Tight money is probably limiting buying. Stocks are said to be below normal in most cases, and a build-up by late summer will be necessary, particularly if delivery promises over remainder of the year begin to lengthen.

## Steel Bars . . .

Bar Prices, Page 147

Steel bar business is moving slowly out of the summer doldrums. Producers don't count on much improvement in August tonnage, but they think September volume will be substantially larger.

There are open spaces in August schedules, but the mills' principal interest at present is in September delivery tonnage. Buying is reported picking up for that month. The forward buying for September encourages considerable optimism for fourth quarter volume. Books for that period have just been opened.

Consumers' inventories are low and metalworking shops are expected to return gradually to the market for supplies.

Scattered gains in sales of cold-drawn bars to the auto builders

are noted, but there is as yet no sign of a major buying movement. A more promising sign is the reported pickup in buying of alloy bars on agricultural implement account. Orders on the books of a leading alloy producer for late third quarter shipment are already much better than they were a year ago.

## Reinforcing Bars . . .

Reinforcing Bar Prices, Page 147

Demand for reinforcing steel will get a lift from the settlement of the cement workers' strike. A considerable volume of construction work has been tied up by the shortage of cement. This has meant the backing up of reinforcing bar deliveries. Also, it has discouraged the placing of new projects.

Last week the cement workers started back to work in many plants as a number of producing companies arranged settlements with the union locals. Most of the 71 cement plants idled are expected to resume full this week.

## Warehouse . . .

Warehouse Prices, Page 152

Warehouse business will show some gains this month, with vacation suspensions at most metalworking plants about completed. Current demand is holding up better than had been expected some weeks ago, but it still has a way to go before it will be back to normal.

July was the poorest month of the year in both tonnage and dollar volume. This was particularly true in the Philadelphia area market where prices dipped in the face of a rise in mill quotations. At most other points warehouse price adjustments have been upward.

Small fabricators are returning to the market and expectations are that August sales will attain satisfactory volume. Actually, July business, while down, fell less than many distributors had feared. On the West Coast, the decline was about 5 per cent.

Warehouse inventories are generally in good shape. Supplies of even plates and structurals are better, though still on the short side. Flat-rolled stocks are substantial, but a pickup in buying is in early prospect.

## Tubular Goods . . .

Tubular Goods Prices, Page 151

Domestic drilling of oil wells is expected to increase substantially in the second half, according to A. W. McKinney, president, National Supply Co., Pittsburgh. Stronger demand for oil country tubing should result. Sales have shown signs of leveling off in recent months owing to a combination of bad weather and heavy crude oil imports which discouraged oil prospecting.

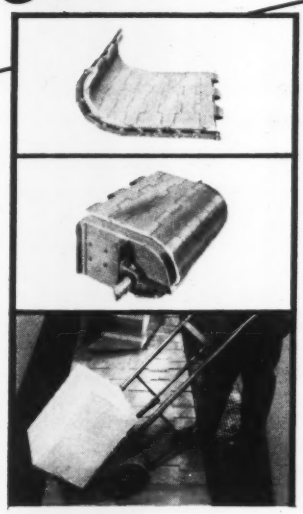
The hope is expressed that President Eisenhower's request that oil imports be cut 10 per cent will be effected, with a resulting pickup in the drilling of new domestic wells.

Demand for mechanical and pressure tubing continues to lag. Builders of roadbuilding equipment and heavy machinery have been ordering small lots of mechanical


another *FIRST* by May-Fran

conveyor belting!

MOVING "SIDEWALK" WILL HANDLE WIDE RANGE OF MATERIALS



May-Fran proudly announces a new concept in materials handling . . . the May-Fran FLAT-TOP steel conveyor belt. Precision-forged steel plates interlock snugly to form a rugged, flat-surfaced conveyor belt ideal for assembling appliances, automobiles and other types of heavy products or for handling hot, heavy or rough materials. Special May-Fran link design forges the entire belt into a rugged, integral unit capable of negotiating either *concave* or *convex* curves—yet permits rapid assembly or disassembly.

Designed especially for flush-with-floor as well as extended surface mountings involving heavy-duty operations, the FLAT-TOP steel conveyor has no stationary or moving parts above the surface of the belt. In floor mounted applications, there are no aisle obstructions to disrupt normal plant traffic . . . employees and mobile equipment can safely cross the FLAT-TOP belt while it is moving. This special flat-deck design also permits the handling of materials that extend beyond the width of the belt.

The May-Fran FLAT-TOP is specifically engineered to provide all the advantages of old-fashioned slat-type belting while eliminating the disadvantages and safety hazards common to slat conveyors. Tightly meshed belt links prevent tools and small assembly parts from falling through the belt.

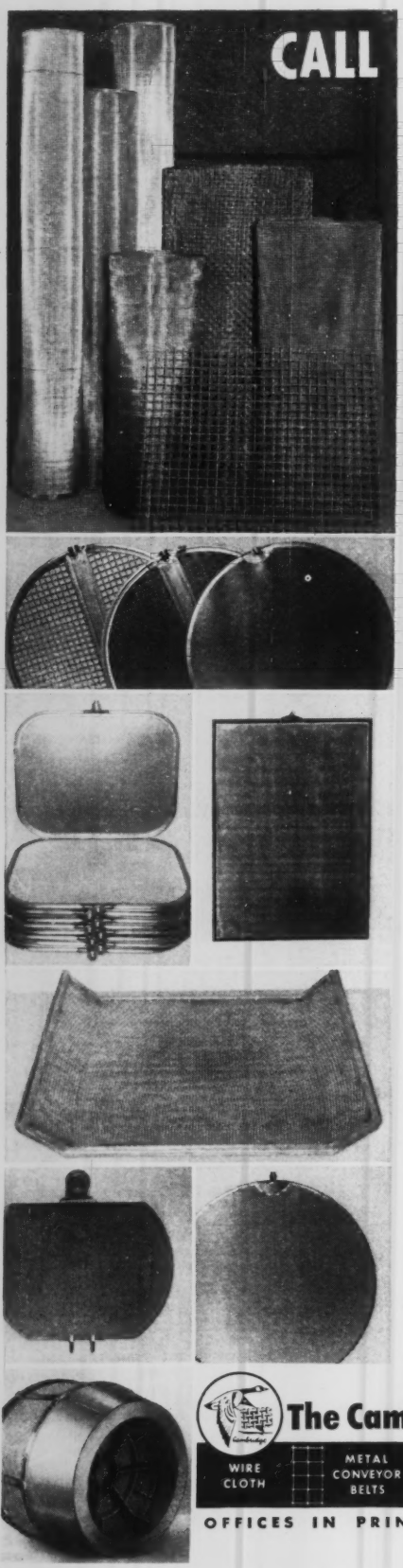
Write and tell us about your materials handling problem. May-Fran engineers will be happy to tailor a FLAT-TOP steel conveyor belt to your requirements.

MAY-FRAN ENGINEERING, INC.

1725 Clarkstone Road • Cleveland 12, Ohio

*For further details ask for special FLAT-TOP bulletin.*

7583-MF




*Cambridge*

for

INDUSTRIAL WIRE CLOTH

in BULK

or

FABRICATED PARTS

**COMPLETE LINE**

Nine weaves ranging from the finest to the coarsest, in any metal or alloy.

**ACCURATELY WOVEN**

Individual loom operation and careful inspection just before shipment assure accurate mesh count and uniform mesh size.

**PROMPTLY DELIVERED**

Most bulk orders are shipped immediately from stock. If your needs are for less frequently used types, we'll schedule our looms to fill your order without delay.

*In fabricating parts . . . filter leaves, strainers, sizing screens . . . we'll work from your prints or draw up prints for your OK.*

**LET US QUOTE on your next order for wire cloth. Call your Cambridge Field Engineer—he's listed under "Wire Cloth" in the Yellow Pages of your 'phone book or write for FREE 80-PAGE CATALOG and stock list.**

**The Cambridge Wire Cloth Co.**

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department J, Cambridge 8, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES


tubing. There are no signs of immediate improvement ahead in demand for pressure tubing which has been moving slowly.

## Alloy Steel . . .

Firth Sterling Inc., Pittsburgh, has increased prices 4 per cent on high temperature alloys. Stainless steel extras, which also apply to high temperature alloys, also were raised 4 per cent.

## Wire . . .

Wire Prices, Pages 149 & 150

Although there was a little improvement in the wire business in June, July volume was down more than anticipated. The dip was close to 20 per cent. So far, there is little activity from the automotive industry, but nothing had been expected before August.

The general feeling is that business will be good in the fourth quarter. Merchant wire volume has been disappointing all year. Sales were restricted in the early months because of excessive moisture in some sections, and they did not snap back when good weather came.

Another handicap: Around 60 per cent of barbed wire consumed is imported; it undersells the domestic product by $20 to $30 a ton, or about $1 a spool. The market for mesh is still good, but not as active as it was last year.

Manufacturers wire demand is expected to spurt when auto makers begin to order for their 1958 model campaigns.

## Tin Plate . . .

Tin Plate Prices, Page 149

Production of tin plate continues slightly ahead of shipments, reports a major Pittsburgh area producer. Canmakers' stocks are being depleted and producers are building their inventories in anticipation of heavy requirements for packing fall crops. With corn and tomatoes to be canned in late third quarter, tin plate shipments should improve this month and continue strong through September.

Seasonal influences will probably cut requirements in November, and the fourth quarter may prove to be the slowest period of

the year. Tin plate salesmen, though, point out that buying is less seasonal than in some previous years. Major cutbacks in production during fourth quarter are not anticipated.

## Semifinished Steel . . .

Semifinished Prices, Page 147

The first of Inland Steel Co.'s three new 320-ton open-hearth furnaces at its Indiana Harbor (Ind.) Works will begin producing steel early this month. Then the company will begin the reconstruction and modernization of three of its older furnaces. In the next 12 months, Inland will repair seven furnaces built during and shortly after World War I.

Special features of the new furnaces will include firing equipment designed to burn a maximum of 1200 gallons of oil an hour. (The older ones had a maximum of 800 gallons.)

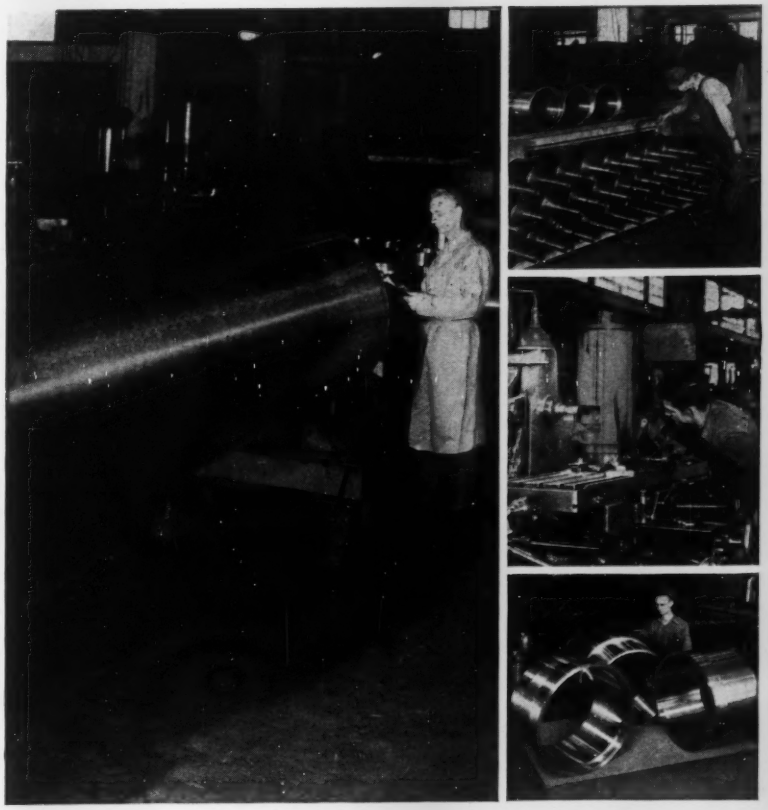
For the first time in Inland's history, its Indiana Harbor Works is running on electricity produced outside the plant. A line carrying 138,000-volt power produced at the new Dean W. Mitchell generating station of the Northern Indiana Public Service Co. was energized in mid-July. Inland generates only 25-cycle power, and the newly purchased power is 60 cycles. The No. 3 open hearth currently is the only department at the works with major equipment that operates on 60 cycles, but all electrical equipment in the current expansion program, including No. 3 cold strip and No. 4 slabbing mills and the new sintering plant, will operate on 60 cycles.

The company is buying outside power because its needs for electricity have outstripped its ability to produce it economically; any further expansion of power generating facilities would require an additional power station.

## Plates . . .

Plate Prices, Page 147

Most producers of sheared plates will have a carry-over into the fourth quarter. (Some of them as much as three to four weeks.) Mechanical difficulties, labor disruptions, hot weather and mass vacations have combined to slow

*You'll find them better for pressure if they're*

**SHENANGO CENTRIFUGAL CASTINGS**

WHATEVER the inside or outside pressures, Shenango centrifugal castings are better able to withstand them without failure.

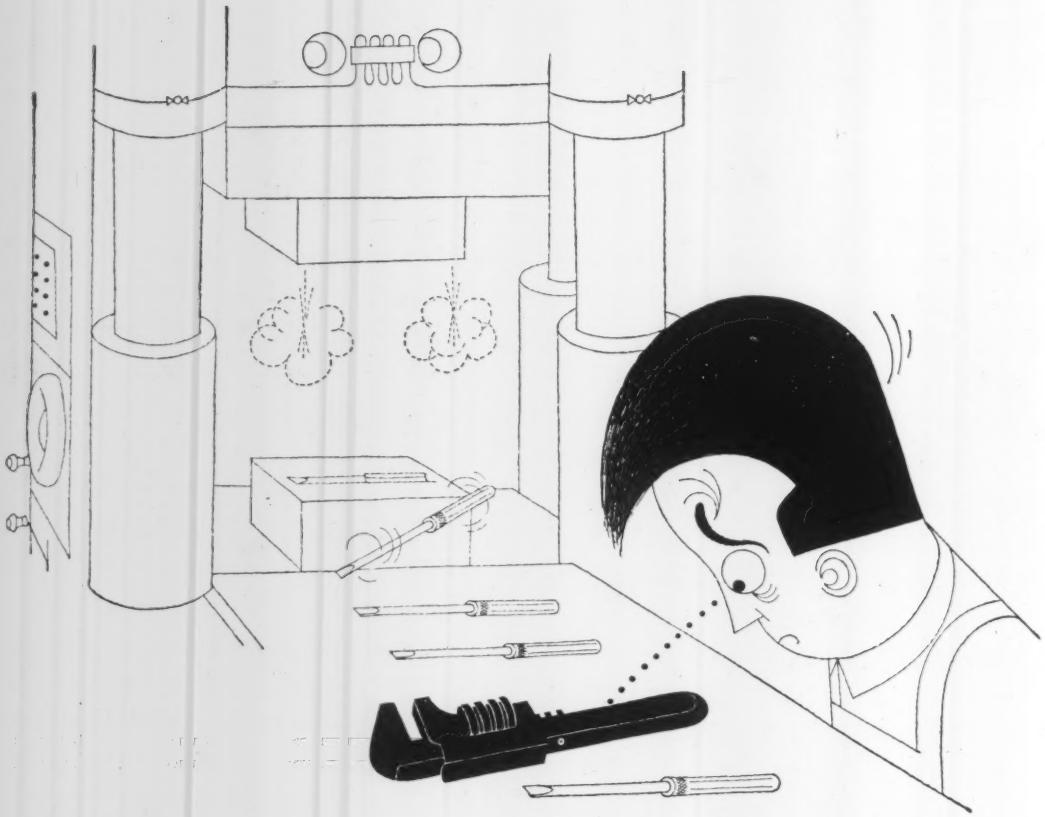
Parts cast by the Shenango centrifugal process are much tougher because their finer, *pressure-dense* grain avoids stress concentrations while providing greater strength, better elongation and freedom from such costly defects as sand inclusions, blowholes and such.

Whether you need rings, rolls, sleeves, liners, bushings, bearings, mandrels or *any* annular or symmetrical part . . . ferrous or non-ferrous . . . in whatever shape, size or dimension to meet your requirements . . . Shenango can do the job. And do the job *better!*

For informative bulletins on the answers to your tough problems, it will pay you to write now to: *Centrifugally Cast Products Division,* The Shenango Furnace Company, Dover, O.

SHENANGO CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL • ALLOY IRONS



# Got a hot work problem?

Crucible **CHRO-MOW** hot work tool steel may be the solution. It's tough, resists wear at elevated temperatures—and you can get it quickly from local Crucible warehouses.

CHRO-MOW is an air hardening tool steel with a very desirable combination of toughness, red hardness and resistance to heat checking. That's why it's an excellent choice for hot forging dies, extrusion dies, or mandrels.

But Chro-Mow is only one of dozens of special tool steels regularly stocked at Crucible warehouses. There is a grade for each of your needs.

And, at Crucible, experienced engineers are ready with advice on selection or fabrication, when you want it. For Crucible is the only specialty steel producer *fully integrated to the point of use.* That means control and responsibility from raw material to warehouse delivery to you.

STOCKS MAINTAINED OF:

Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting Die and Plastic Mold Steel, Drill Rod, Tool Bits, and Hollow Tool Steel Bars) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el, Hy-Tuf, AISI Alloy . . . Onyx Spring, Hollow Drill Steel and other special purpose steels.

**CRUCIBLE WAREHOUSE SERVICE**

## Crucible Steel Company of America

General Sales Offices, The Oliver Building, Mellon Square, Pittsburgh 22, Pa. Branch Offices and Warehouses: Atlanta • Baltimore Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Dayton • Denver • Detroit • Grand Rapids Harrison • Houston • Indianapolis • Los Angeles • Milwaukee • New Haven • New York • Philadelphia • Pittsburgh • Portland, Ore. Providence • Rockford • San Francisco • Seattle • Springfield, Mass. • St. Louis • St. Paul • Syracuse • Toronto, Ont.

shipments beyond the expectations of some mills. There is little prospect they will be able to catch up on back orders before the end of the current quarter.

Constant over-all pressure for sheared plates is noted. Any easing in one area of demand appears to be quickly offset by heavier demands from other consuming areas. As a result, general requirements have been running ahead of supplies.

Especially strong inquiry is reported from manufacturers of heavy utility equipment, such as hydraulic and steam turbines and boilers.

Eastern platemakers are opening their books for deliveries beyond the end of this quarter. Some are on a month-to-month basis; most will accept business for the entire quarter.

The Pittsburgh area mills plan to ship as many plates this month as they did in July. September quotas will equal those for August.

Where possible, some buyers are switching from heavy gage to light gage plates which are in noticeably easier supply, even at the warehouse level. Construction firms say plates over 1-in. thick are hard to get, but the shortage is not holding back construction to any extent.

Universal plates are in fair supply. Strip-plate is more plentiful, but some tightening is anticipated in this product when the continuous mills resume volume production of sheets on automotive account for September shipment.

## Structural Shapes . . .

Structural Shape Prices, Page 147

Structural steel buying has started to level off after a decline of several weeks. Whether this will lead to an upturn in demand remains to be seen. The fabricators appear none too confident of a pickup ahead, since they are still competing sharply for new work in an effort to bolster their sagging backlogs. Order books still are fairly well extended and fabricating shops continue busy.

The high rate of fabrication is reflected in continued stringency in plain structurals. Some shape

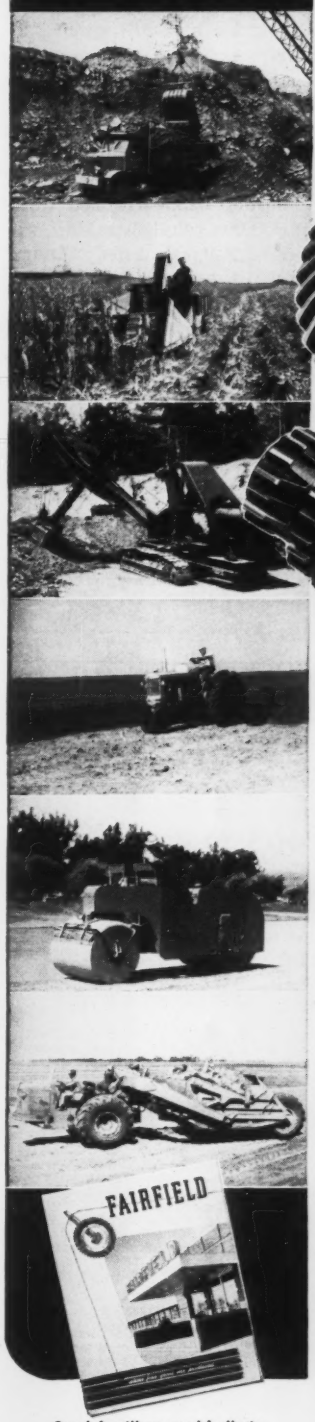

GEARS by FAIRFIELD

A Plus Value IN ANY PRODUCT!

If GEARS are a vital part of the product you make, there is no finer recommendation for the QUALITY of your product than to be able to say it is equipped with "FAIRFIELD GEARS."

Long producers of the gears needed in high grade trucks and tractors, Fairfield now brings the same standards for GEAR PERFORMANCE to a wide variety of products: Agricultural Implements . . . Power Shovels . . . Machine Tools . . . Diesel Locomotives . . . Road Graders . . . Lift Trucks . . . Road Rollers . . . Pump Drives . . . Winches . . . Military Vehicles . . . and a host of others.

Fairfield's facilities are unexcelled. Here "under one roof" in a new and ultra modern plant, Fairfield has everything needed for producing all kinds of gears: spur . . . herringbone . . . spiral bevel . . . ground tooth spiral bevel . . . straight bevel . . . coniflex bevel . . . hypoid . . . zerol . . . worms and worm gears . . . splined shafts . . . differentials. Get acquainted with Fairfield — your inquiry will receive prompt attention.




Send for illustrated bulletin describing Fairfield's facilities.

FAIRFIELD MANUFACTURING CO.
2313 S. Concord Rd.,
Lafayette, Indiana

For FINE GEARS

mills are four weeks or more behind on commitments. Some mills went overboard to some extent in booking tonnage in anticipation of a greater dip in specifications this summer than actually developed.

Fabricated structural steel deliveries by Boston area shops have been set back as much as a month by strikes. This comes at a time when shipment schedules have been improving as supplies of steel become freer, with the possible exception of wide flange sections.

Estimating of bridge tonnage has declined in New England. For all types of construction there is substantial variance in prices for fabrication and erection. The increase in prices on plain structurals and higher shop costs are not being passed on completely in going contracts.

On the West Coast, fabricators are marking time until strikes in the Los Angeles area are settled. Several trade unions have been off the job two or more weeks, holding up work on highway and school construction.

First-half bookings of fabricated structural steel were off 21 per cent from the corresponding period last year, reports the American Institute of Steel Construction. The total was 1,724,752 against 2,176,848 tons in the first six months of last year. June was the lightest month this year to date, bookings amounting to 220,025 tons.

The near-record June shipments of 329,256 tons pulled the midyear total up to 1,818,112 tons, a gain of 5 per cent over the like period last year. Order backlogs as of June 30 had been whittled down almost 200,000 tons since May. The total of 3,219,908 tons, though, was still 13 per cent above that for last June. During the following four months about 1,277,000 tons are slated for fabrication.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

2200 tons, 22-story office building, Sam Rudin, 40th street and Lexington avenue, New York, to Grand Iron Works, that city.

1500 tons, office building, Smith and Livingston streets, Brooklyn, N.Y., to Bethlehem Fabricators, Bethlehem, Pa.

1400 tons, state bridge work, LR 333, section 12, York county, Pennsylvania, to the Lehigh Structural Steel Co., Allentown, Pa.

900 tons, municipal pier, Brooklyn, N.Y., to White Plains Iron Works, Peekskill, N.Y.

350 tons, two highway structures, Division street project, Pawtucket, R.I., to Tower Iron Works, Providence, R.I.; Campanella & Cardi Construction Co., Hillsgrove, R.I., general contractor; steel for five other bridges let direct by the state to the same fabricator.

265 tons, addition, state reformatory, Elmira, N.Y., through F. S. Freeman and Mandell Bros., general contractors, to Bethlehem Fabricators, Bethlehem, Pa.

150 tons, factory building, Millprint Inc., Downington, Pa., to an unnamed fabricator.

125 tons, municipal service building, Philadelphia, to the Frank M. Weaver Co., Lansdale, Pa.

### STRUCTURAL STEEL PENDING

3100 tons, subway work, route 112—section 2, around Christie and Delancy streets, New York, bids to be opened Aug. 16 by the New York City Transit Authority.

1023 tons, state bridge work, Nassau county, New York, bids Aug. 8.

750 tons, state bridge work, Ulster county, New York, bids Aug. 8.

150 tons, state bridge, New Kensington, Pa.; bids Aug. 16.

120 tons, state bridge work, Steuben county, New York, bids Aug. 8.

117 tons, state bridge work, Lehigh county, Pennsylvania, bids Aug. 16; this is in addition to 1171 tons of bridge work for Lehigh county, recently noted as up for bids on that date.

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

1080 tons, seven highway structures, Division street project, Pawtucket, R.I., to Plantations Steel Co., Providence, R.I.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

500 tons, office building, International Business Machines Co., Boston, to Bethlehem Steel Co., Bethlehem, Pa.; Turner Construction Co., Boston, general contractor.

220 tons, dormitory, State Teachers College, Fitchburg, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Park Construction Co., Boston, general contractor; 30 tons, bar joists, to Cadmus Steel Co., Boston.

### REINFORCING BARS PENDING

750 tons, state bridge work, LR 443 (20), Lehigh county, Pennsylvania, bids Aug. 16; 1171 tons of structural shapes also required.

467 tons, state bridge work, LR 443 (21), Lehigh county, Pennsylvania, bids Aug. 16; also required are 117 tons of structural steel.

## PLATES . . .

### PLATES PLACED

500 tons, 10,640 ft of 48 to 24-in. steel water pipe, for Bellingham, Wash., to Beall Tank & Pipe Co., Portland, Oreg., low at $145,820.

500 tons, 1-million-gal standpipe, Niskayuna, N.Y., to Graver Tank & Mfg. Co. Inc., East Chicago, Ind.

300 tons, floating caisson for Rocky Reach power project, Wenatchee, Wash., to Todd Shipyards Corp., Seattle, low at $195,062.

200 tons, Raritan Arsenal, Metuchen, N.J.; also 215 tons, hot-rolled sheets.

### PLATES PENDING

250 tons or more, 3040 ft of 24-in. 5/16 plate, steel water pipe. Bids to the Port of Tacoma, Wash., July 24; alternatives for cast iron pipe.

## PIPE . . .

### CAST IRON PIPE PLACED

800 tons, 24 to 16-in., Bellingham, Wash., to Pacific States Cast Iron Pipe Co., Seattle, at $122,597.

### STEEL PIPE PLACED

800 tons, 42-in. fabricated steel pipe, Reading, Pa., to Alco Products Inc., Schenectady, N.Y.


## Imported Steel

Prices per 100 lbs. (except where otherwise noted) landed, including customs duty, but no other taxes.

| | Atlantic & Gulf Coast | West Coast | Vancouver | Montreal |
|---|---|---|---|---|
| Deformed Bars (⅜" Dia. incl. all extras) | $6.78 | $7.01 | $6.76 | $6.44 |
| Merchant Bars (¼" Round incl. all extras) | 7.62 | 7.85 | 7.48 | 7.22 |
| Bands (1"x⅛"x20' incl. all extras) | 7.76 | 7.98 | 7.65 | 7.38 |
| Angles (2"x2"x¼" incl. all extras) | 6.57 | 6.75 | 6.99 | 6.69 |
| Beams & Channels (base) | 6.82 | 7.00 | 7.24 | 6.94 |
| Furring Channels (C.R. ¾", per 1000') | 26.62 | 27.77 | .... | .... |
| Barbed Wire (per 82 lb. net reel) | 6.95 | 7.40 | 7.75 | 7.80 |
| Nails (bright, common, 20d and heavier) | 8.38 | 8.58 | 9.07 | 8.99 |
| Larssen Sheet Piling (section II, new, incl. size extra) | 7.80 | 8.10 | 8.10 | 7.80 |
| Wire, Manufacturer's, bright, low C, (11½ ga.) | 7.38 | 7.52 | 8.52 | 8.52 |
| Wire, galvanized, low C, (11½ ga.) | 8.01 | 8.15 | 9.42 | 9.42 |
| Wire, Merchant quality, bl. ann., (10 ga.) | 7.60 | 7.75 | 8.78 | 8.78 |
| Rope Wire (.045", 247,000 PSI, incl. extras) | 13.60 | 13.75 | 13.00 | 13.00 |
| Wire, fine and weaving, low C, (20 ga.) | 10.66 | 10.80 | 10.17 | 12.17 |
| Tie Wire, autom. baler (14G, 97 lbs. net) | 9.58 | 9.73 | 9.64 | 9.54 |
| Merchant Pipe (½" galv. T & C, per 100') | 8.48 | 8.83 | .... | .... |
| Casing (5½", 15.5 J55, T & C, per 100') | 194.00 | 199.00 | .... | .... |
| Tubing (2⅞", 6.4 J55, EUE, per 100') | 103.00 | 104.00 | .... | .... |
| Forged R. Turn. Bars, C-1035 (from 10" dl.) | 14.00 | 14.23 | 14.00 | 13.74 |

Ask prices on: Bulb tees, bolts and nuts, manganese steel plates and shapes, welded wire reinforcing mesh and hardware cloth, boiler tubes, A-335-P11 pressure pipe.

## from prominent century-old West German Mills

**Through Stahlunion-Export GmbH**

**BOCHUMER VEREIN** World's first Steel Foundry, 1842—Vacuum degassed Forgings. Pinion wire and spring wire for watches and clocks.

**DORTMUNDER UNION** Originators of Interlock Sheet Piling—Larssen Sheet Piling, Plate, Shapes, Forged Bars and Shafts.

**NIEDERRHEIN** Europe's most modern Rod Mill—OH, CH, Low Metalloid, Specialty Wire Rod, Merchant Bars.

**WESTFAELISCHE UNION** Europe's largest Wire Mill—All types drawn Wire and Wire Products—Nails, Barbwire, Wire Rope, Prestress Concrete Wire and Strand.

**PHOENIX RHEINROHR** Europe's largest Pipe Mill—Pipe, Tubing, Flanges, Welding Fittings, Precision Tubes. Tubular Masts.

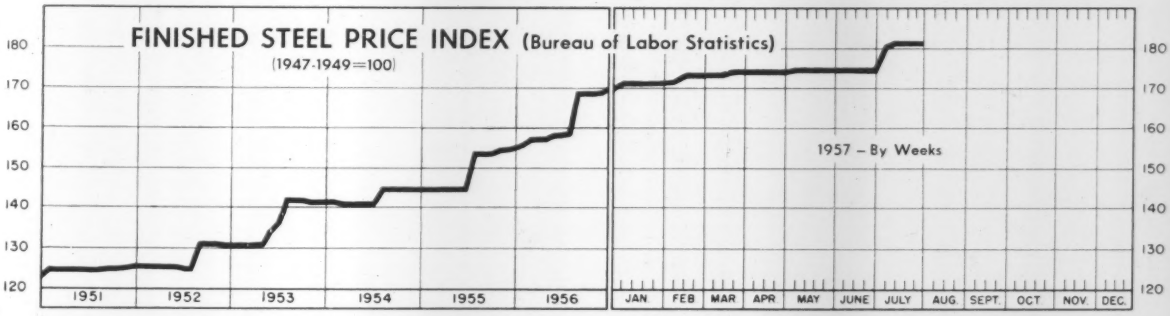
## delivered on Domestic Terms

No red tape! We deliver to any place in North America. Over 10 years of service to more than 2000 North American accounts—as a domestic firm, on domestic terms—with lower costs or better deliveries. Write for "How to be at home with products made abroad" and the address of your local KOC representative.

**KURT ORBAN COMPANY, INC.,** 46 Exchange Place, Jersey City 2, N. J.

In Canada: Kurt Orban Canada, Ltd., Vancouver, Toronto, Montreal

# Price Indexes and Composites




| July 30, 1957 | Week Ago | Month Ago | July Avg. | Year Ago |
|---|---|---|---|---|
| 181.5 | 181.5 | 174.3 | 181.5 | 158.6 |

## AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended July 30

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

| | | | |
|---|---|---|---|
| Rails, Standard, No. 1 | $5.600 | Bars, Reinforcing | 6.210 |
| Rails, Light, 40 lb | 7.067 | Bars, C.F., Carbon | 10.360 |
| Tie Plates | 6.600 | Bars, C.F., Alloy | 13.875 |
| Axles, Railway | 9.825 | Bars, C.F., Stainless, 302 (lb) | 0.553 |
| Wheels, Freight Car, 33 in. (per wheel) | 60.00 | Sheets, H.R., Carbon | 6.192 |
| Plates, Carbon | 6.150 | Sheets, C.R., Carbon | 7.089 |
| Structural Shapes | 5.942 | Sheets, Galvanized | 8.220 |
| Bars, Tool Steel, Carbon (lb) | 0.480 | Sheets, C.R., Stainless, 302 (lb) | 0.688 |
| Bars, Tool Steel, Alloy, Oil Hardening Die (lb) | 0.585 | Sheets, Electrical | 12.108 |
| Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb) | 1.274 | Strip, C.R., Carbon | 9.193 |
| Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb) | 1.769 | Strip, C.R., Stainless, 430 (lb) | 0.493 |
| Bars, H.R., Alloy | 10.525 | Strip, H.R., Carbon | 6.245 |
| Bars, H.R., Stainless, 303 (lb) | 0.525 | Pipe, Black, Buttweld (100 ft) | 19.814 |
| Bars, H.R., Carbon | 6.425 | Pipe, Galv., Buttweld (100 ft) | 23.264 |
| | | Pipe, Line (100 ft) | 199.023 |
| | | Casing, Oil Well, Carbon (100 ft) | 194.499 |
| | | Casing, Oil Well, Alloy (100 ft) | 304.610 |
| | | *Tubes, Boiler (100 ft)* | *49.130* |
| | | *Tubing, Mechanical, Carbon (100 ft)* | *24.953* |
| | | *Tubing, Mechanical, Stainless, 304 (100 ft)* | *205.608* |
| | | Tin Plate, Hot-dipped, 1.25 lb (95 lb base box) | 9.783 |
| | | Tin Plate, Electrolytic, 0.25 lb (95 lb base box) | 8.483 |
| | | Black Plate, Canmaking Quality (95 lb base box) | 7.583 |
| | | Wire, Drawn, Carbon | 10.225 |
| | | *Wire, Drawn, Stainless, 430 (lb)* | *0.654* |
| | | Bale Ties (bundle) | 7.967 |
| | | Nails, Wire, 8d Common | 9.828 |
| | | Wire, Barbed (80-rod spool) | 8.719 |
| | | Woven Wire Fence (20-rod roll) | 21.737 |

## STEEL's FINISHED STEEL PRICE INDEX*

| | July 31 1957 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Index (1935-39 avg=100) | 239.15 | 239.15 | 239.15 | 210.45 | 181.40 |
| Index in cents per lb | 6.479 | 6.479 | 6.479 | 5.701 | 4.914 |

## STEEL's ARITHMETICAL PRICE COMPOSITES

| | | | | | |
|---|---|---|---|---|---|
| Finished Steel, NT | $146.19 | $146.19 | $145.74 | $131.27 | $113.23 |
| No. 2 Fdry Pig Iron, GT | 66.49 | 66.49 | 64.70 | 61.09 | 52.54 |
| Basic Pig Iron, GT | 65.99 | 65.99 | 64.23 | 60.11 | 52.16 |
| Malleable Pig Iron, GT | 67.27 | 67.27 | 65.77 | 61.63 | 53.27 |
| Steelmaking Scrap, GT | 54.50 | 54.00 | 55.33 | 53.17 | 43.00 |

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

# Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

| FINISHED STEEL | July 31 1957 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Bars, H.R., Pittsburgh | 5.425 | 5.425 | 5.425 | 4.65 | 3.95 |
| Bars, H.R., Chicago | 5.425 | 5.425 | 5.425 | 4.65 | 3.95 |
| Bars, H.R., deld., Philadelphia | 5.715 | 5.715 | 5.715 | 4.93 | 4.502 |
| Bars, C.F., Pittsburgh | 7.30* | 7.30* | 7.30* | 6.25* | 4.925 |
| Shapes, Std., Pittsburgh | 5.275 | 5.275 | 5.275 | 4.60 | 3.85 |
| Shapes, Std., Chicago | 5.275 | 5.275 | 5.275 | 4.60 | 3.85 |
| Shapes, deld., Philadelphia | 5.585 | 5.585 | 5.585 | 5.00 | 4.13 |
| Plates, Pittsburgh | 5.10 | 5.10 | 5.10 | 4.50 | 3.90 |
| Plates, Chicago | 5.10 | 5.10 | 5.10 | 4.50 | 3.90 |
| Plates, Coatesville, Pa. | 5.50 | 5.50 | 5.50 | 4.80 | 4.35 |
| Plates, Sparrows Point, Md. | 5.10 | 5.10 | 5.10 | 4.50 | 3.90 |
| Plates, Claymont, Del. | 5.70 | 5.70 | 5.70 | 5.35 | 4.35 |
| Sheets, H.R., Pittsburgh | 4.925 | 4.925 | 4.925 | 4.325 | 3.775 |
| Sheets, H.R., Chicago | 4.925 | 4.925 | 4.925 | 4.325 | 3.775 |
| Sheets, C.R., Pittsburgh | 6.05 | 6.05 | 6.05 | 5.325 | 4.575 |
| Sheets, C.R., Chicago | 6.05 | 6.05 | 6.05 | 5.325 | 4.575 |
| Sheets, C.R., Detroit | 6.05-6.15 | 6.05-6.15 | 6.05-6.15 | 5.325-5.425 | 4.775 |
| Sheets, Galv., Pittsburgh | 6.60 | 6.60 | 6.60 | 5.85 | 5.075 |
| Strip, H.R., Pittsburgh | 4.925 | 4.925 | 4.925 | 4.325 | 3.75-4.00 |
| Strip, H.R., Chicago | 4.925 | 4.925 | 4.925 | 4.325 | 3.725 |
| Strip, C.R., Pittsburgh | 7.15 | 7.15 | 7.15 | 6.25 | 5.10-5.80 |
| Strip, C.R., Chicago | 7.15 | 7.15 | 7.15 | 6.25-6.35 | 5.35 |
| Strip, C.R., Detroit | 7.25 | 7.25 | 7.25 | 6.35 | 5.30-5.60 |
| Wire, Basic, Pittsburgh | 7.65 | 7.65 | 7.65 | 6.60 | 4.85-5.225 |
| Nails, Wire, Pittsburgh | 8.95 | 8.95 | 8.95 | 7.60 | 5.90-6.35 |
| Tin plate (1.50 lb) box, Pitts. | $10.30 | $10.30 | $10.30 | $9.85 | $8.95 |

*Including 0.35c for special quality.

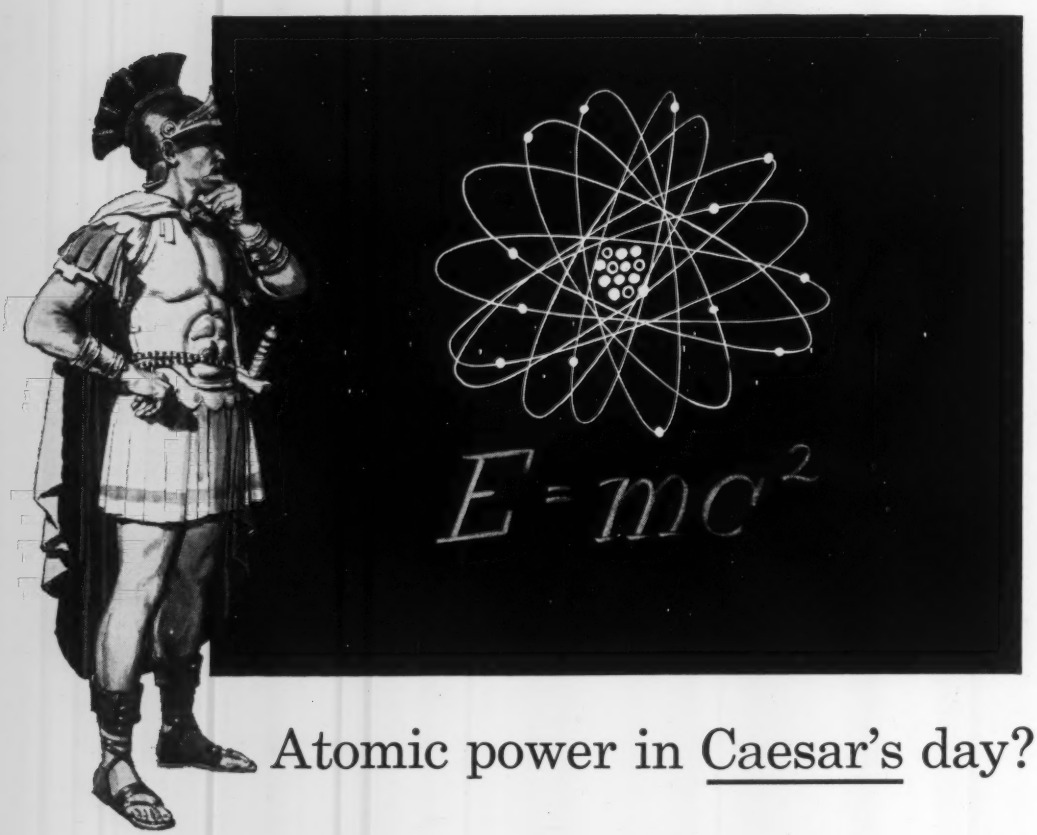
| SEMIFINISHED STEEL | | | | | |
|---|---|---|---|---|---|
| Billets, forging, Pitts. (NT) | $96.00 | $96.00 | $96.00 | $84.50 | $70.50 |
| Wire rods, 7/32-5/8" Pitts. | 6.15 | 6.15 | 6.15 | 5.375 | 4.325 |

| PIG IRON, Gross Ton | July 31 1957 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Bessemer, Pitts. | $67.00 | $67.00 | $65.50 | $62.25 | $53.00 |
| Basic, Valley | 67.00 | 64.50 | 64.50 | 60.00 | 52.00 |
| Basic, deld., Phila. | 69.88 | 69.88 | 68.38 | 66.26 | 56.75 |
| No. 2 Fdry, NevilleIsland, Pa. | 66.50 | 66.50 | 65.00 | 63.00 | 52.50 |
| No. 2 Fdry, Chicago | 66.50 | 66.50 | 65.00 | 61.75 | 52.50 |
| No. 2 Fdry, deld., Phila. | 70.38 | 70.38 | 68.88 | 66.76 | 57.25 |
| No. 2 Fdry, Birm. | 62.50 | 62.50 | 59.00 | 57.00 | 48.88 |
| No. 2 Fdry (Birm.) deld. Cin. | 70.20 | 70.20 | 66.70 | 62.70 | 56.43 |
| Malleable, Valley | 66.50 | 65.00 | 65.00 | 60.50 | 52.50 |
| Malleable, Chicago | 66.50 | 66.50 | 65.00 | 61.75 | 52.50 |
| Ferromanganese, Duquesne | 255.00† | 255.00† | 255.00† | 215.00† | 228.00* |

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

| SCRAP, Gross Ton (Including broker's commission) | | | | | |
|---|---|---|---|---|---|
| No. 1 Heavy Melt, Pittsburgh | $56.50 | $55.50 | $56.50 | $46.50 | $44.00 |
| No. 1 Heavy Melt, E. Pa. | 53.00 | 53.50 | 56.00 | 50.00 | 41.50 |
| No. 1 Heavy Melt, Chicago | 54.00 | 53.00 | 53.50 | 46.00 | 42.50 |
| No. 1 Heavy Melt, Valley | 55.50 | 54.50 | 54.50 | 49.50 | 44.00 |
| No. 1 Heavy Melt, Cleve. | 52.50 | 51.50 | 51.50 | 55.50 | 43.00 |
| No. 1 Heavy Melt, Buffalo | 46.50 | 46.50 | 46.50 | 44.50 | 43.00 |
| Rails, Rerolling, Chicago | 79.50 | 79.50 | 74.50 | 68.50 | 52.50 |
| No. 1 Cast, Chicago | 47.50 | 47.50 | 47.50 | 45.50 | 45.00 |

| COKE, Net Ton | | | | | |
|---|---|---|---|---|---|
| Beehive, Furn., Connlsvl. | $15.25 | $15.25 | $15.25 | $14.125 | $14.75 |
| Beehive, Fdry., Connlsvl. | 18.25 | 18.25 | 18.00 | 16.50 | 17.00 |




# Atomic power in Caesar's day?

*Certainly!*

It was there, in the ground, in the air and water. It always had been. There are no more "raw materials" today than there were when Rome ruled the world.

The only thing new is knowledge . . . knowledge of how to get at and rearrange raw materials. Every invention of modern times was "available" to Rameses, Caesar, Charlemagne.

In this sense, then, we have available *today* in existing raw materials the inventions that can make our lives longer, happier, and inconceivably easier. We need only *knowledge* to bring them into reality.

Could there possibly be a better argument for the strengthening of our *sources* of knowledge—our colleges and universities? Can we possibly deny that the welfare, progress—indeed the very *fate*—of our nation depends on the quality of knowledge generated and transmitted by these institutions of higher learning?

It is almost unbelievable that a society such as ours, which has profited so vastly from an accelerated accumulation of knowledge, should allow anything to threaten the wellsprings of our learning.

*Yet this is the case*

The crisis that confronts our colleges today threatens to weaken seriously their ability to produce the kind of graduates who can assimilate and carry forward our rich heritage of learning.

The crisis is composed of several elements: a salary scale that is driving away from teaching the kind of mind *most qualified* to teach; overcrowded classrooms; and a mounting pressure for enrollment that will *double* by 1967.

In a very real sense our personal and national progress depends on our colleges. They *must* have our aid.

Help the colleges or universities of your choice. Help them plan for stronger faculties and expansion. The returns will be greater than you think.

If you want to know what the college crisis means to you, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

HIGHER EDUCATION
KEEP IT BRIGHT

PUBLIC SERVICE ADVERTISING COUNCIL

*Sponsored as a public service, in cooperation with the Council for Financial Aid to Education*

# Steel Prices

Mill prices as reported to STEEL, July 31, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 148; to footnotes, page 150.

## SEMIFINISHED

**INGOTS, Carbon, Forging (NT)**
Munhall,Pa. U5 ....$73.50

**INGOTS, Alloy (NT)**
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville,O. S3 .....77.00
Midland,Pa. C18 .....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

**BILLETS, BLOOMS & SLABS**
**Carbon, Rerolling (NT)**
Bessemer,Pa. U5 ....$77.50
Bridgeport,Conn. N19 ..80.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 .....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 .....77.50
Johnstown,Pa. B2 ....77.50
Lackawanna,N.Y. B2 ..77.50
Munhall,Pa. U5 .....77.50
S.Chicago,Ill. R2, U5 ..77.50
S.Duquesne,Pa. U5 ....77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

**Carbon, Forging (NT)**
Bessemer,Pa. U5 ....$96.00
Bridgeport,Conn. N19..101.00
Buffalo R2 .....96.00
Canton,O. R2 .....98.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3 101.00
Ensley, Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 .....96.00
Geneva,Utah C11 ....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 .....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S.Chicago R2,U5,W14 96.00
S.Duquesne,Pa. U5 ....96.00
S.SanFrancisco B3 ....105.50
Warren,O. C17 .....96.00

**Alloy, Forging (NT)**
Bethlehem,Pa. B2 ...$114.00
Bridgeport,Conn. N19..114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3 121.00
Detroit S41 .....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 ...135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 ...114.00
Johnstown,Pa. B2 ....114.00
Lackawanna,N.Y. B2 114.00
LosAngeles B3 .....134.00
Lowellville,O. S3 ....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 114.00
S.Duquesne,Pa. U5 ...114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

**ROUNDS, SEAMLESS TUBE (NT)**
Bridgeport,Conn. N19.$122.50
Buffalo R2 .....117.50
Canton,O. R2 .....120.00
Cleveland,O. R2 .....117.50
Gary,Ind. U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ..117.50
Warren,O. C17 .....117.50

**SKELP**
Aliquippa,Pa. J5 .....5.075
LoneStar,Tex. L6 ....5.025
Munhall,Pa. U5 .....4.875
Warren,O. R2 .....4.875
Youngstown R2, U5 ..4.875

**WIRE RODS**
AlabamaCity,Ala. R2 ..6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....5.80
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1..6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 .....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P17 ....6.15
N.Tonawanda,N.Y. B11..6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 .....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2 ..6.25
Sterling,Ill.(1) N15 ....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 ....6.45

## STRUCTURALS

**Carbon Steel Std. Shapes**
Ala.City,Ala. R2 ....5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 .....5.275
Bessemer,Ala. T2 .....5.275
Bethlehem,Pa. B2 ....5.325
Birmingham C15 .....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 ....6.025
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 ..5.275
Johnstown,Pa. B2 .....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ...5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ....5.50
Portland,Oreg. O4 .....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ....5.975
Weirton,W.Va. W6 ....5.275

**Wide Flange**
Bethlehem,Pa. B2 ...5.325
Clairton,Pa. U5 .....5.275
Fontana,Calif. K1 ....6.225
IndianaHarbor,Ind. I-2 5.525
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ....5.50
S.Chicago,Ill. U5 .....5.275

**Alloy Std. Shapes**
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill. U5 .....6.55

**H.S., L.A. Std. Shapes**
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 .....8.50
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14..7.75
S.SanFrancisco B3 .....8.40
Struthers,O. Y1 .....7.75

**H.S., L.A. Wide Flange**
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

## PILING

**BEARING PILES**
Bethlehem,Pa. B2 ....5.325
Lackawanna,N.Y. B2 .5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

**STEEL SHEET PILING**
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225

## PLATES

**PLATES, Carbon Steel**
Ala.City,Ala. R2 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky. (15) A10 5.10
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 ....5.70
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 .....5.50
Conshohocken,Pa. A3 ..5.20
Ecorse,Mich. G5 .....5.20
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.85
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 .....5.30
Harrisburg,Pa. P4 .....5.80
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 .....5.45
Mansfield,O. E6 .....6.00
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale, Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Youngstown R2, U5, Y1 5.10

**PLATES, Carbon Abras. Resist.**
Claymont,Del. C22 ....7.35
Fontana,Calif. K1 .....7.50
Geneva, Utah C11 ....6.75
Johnstown,Pa. B2 .....7.00
SparrowsPoint,Md. B2 7.00

**PLATES, Wrought Iron**
Economy,Pa. B14 .....13.15

**PLATES, H.S., L.A.**
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Clairton,Pa. U5 .....7.625
Claymont,Del. C22 ....7.625
Cleveland J5, R2 ....7.625
Coatesville,Pa. L7 ....7.55
Conshohocken,Pa. A3..7.625
Ecorse,Mich. G5 .....7.725
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1. 8.375
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1 7.625
Johnstown,Pa. B2 ....7.625
Lackawanna,N.Y. B2 ..7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 7.625
SparrowsPoint,Md. B2 7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

**PLATES, Alloy**
Aliquippa,Pa. J5 .....7.20
Claymont,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Farrell,Pa. S3 .....7.20
Fontana,Calif.(30) K1..7.95
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 ....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14 7.20
SparrowsPoint,Md. B2 .7.20
Youngstown Y1 .....7.20

**FLOOR PLATES**
Cleveland J5 .....6.175
Conshohocken,Pa. A3 ..6.175
Harrisburg,Pa. P4 ....6.275
Ind.Harbor,Ind. I-2 ..6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

**PLATES, Ingot Iron**
Ashland c.l. (15) A10..5.35
Ashland l.c.l. (15) A10..5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

## BARS

**BARS, Hot-Rolled Carbon (Merchant Quality)**
Ala.City,Ala.(9) R2 ..5.425
Aliquippa,Pa.(9) J5 ....5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ...5.425
Birmingham(9) C15 ..5.425
Bridgeport,Conn.(9) N19 5.65
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland(9) R2 .....5.425
Ecorse,Mich.(9) G5 ....5.525
Emeryville,Calif. J7 .. 6.175
Fairfield,Ala.(9) T2 ...5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ..6.125
Gary,Ind.(9) U5 .....5.425
Houston(9) S5 .....5.675
Ind.Harbor(9) I-2, Y1 5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 ....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
N.Tonawanda,N.Y.(46)B11 5.775
Pittsburg,Calif.(9) C11 6.125
Pittsburgh(9) J5 .....5.425
Portland,Oreg. O4 ....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5 .5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ...5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..5.425
Torrance,Calif.(9) C11 6.125
Youngstown(9) R2, U5 5.425

**BARS, H.R. Leaded Alloy**
**(Including leaded extra)**
Warren,O. C17 .....7.475

**BARS, Hot-Rolled Alloy**
Aliquippa,Pa. J5 .....6.475
Bethlehem,Pa. B2 ....6.475
Bridgeport,Conn. N19 ..6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 .....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Ecorse,Mich. G5 .....6.575
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind. I-2, Y1 6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2 .....6.475
Midland,Pa. C18 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

**BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy**
Aliquippa,Pa. J5 .....7.925
Bessemer,Ala. T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Bridgeport,Conn. N19 ..7.95
Clairton,Pa. U5 .....7.925
Cleveland R2 .....7.925
Ecorse,Mich. G5 .....8.025
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 .....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 ..7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2 ..7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14 7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

**BAR SIZE ANGLES; H.R. Carbon**
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 .....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ...5.425
Tonawanda,N.Y. B12 ..5.425

**BAR SIZE ANGLES; S. Shapes**
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

**BAR SHAPES, Hot-Rolled Alloy**
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.80
KansasCity,Mo. S5 .....6.80
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

**BARS, C.F., Leaded Alloy (Including leaded extra)**
Ambridge,Pa. W18 ...9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 .....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.475
LosAngeles P2, S30
(Gr. A) .....11.30
(Gr. B) .....11.80
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 .....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 .....9.925

**BARS, Cold-Finished Carbon**
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 .....7.90
Bridgeport,Conn. N19 ..7.65
Buffalo B5 .....7.85
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 .....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ..7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 ....7.30
Hammond,Ind. J5, L2..7.30
Hartford,Conn. R2 .....7.80
Harvey,Ill. B5 .....7.30
LosAngeles P2, S30 ....8.75
LosAngeles R2 .....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ....7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 .....7.30
Plymouth,Mich. P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 .....7.30
SpringCity,Pa. K3 .....7.75
Struthers,O. Y1 .....7.30
*Warren,O. C17 .....7.30*
Willimantic Conn. J5 ...7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 ....7.30

**BARS, Cold-Finished Carbon (Turned and Ground)**
Cumberland,Md.(5) C19..6.55

**BARS, Cold-Finished Alloy**
Ambridge,Pa.- W18 ....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. N19 ..8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 .....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ...8.775
Gary,Ind. R2 .....8.775
GreenBay,Wis. F7 ....8.775
Hammond,Ind. J5, L2..8.775
Hartford,Conn. R2 ....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ..8.775
Los Angeles P2, S30 ...10.65
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ...8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 ....8.975
S.Chicago W14 .....8.775
SpringCity,Pa. K3 .....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ...8.775

**BARS, Reinforcing (To Fabricators)**

Ala.City,Ala. R2 .....5.425
Atlanta A11 .....5.625
Birmingham C15 .....5.425
Bridgeport,Conn. N19 ...5.65
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emerysville,Calif. J7 ..6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2,Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ..6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ....6.125
Youngstown R2, U5 ..5.425

**BARS, Reinforcing (Fabricated; to Consumers)**

Boston B2 .....7.65
Chicago US .....6.91
Cleveland US .....6.89
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ...6.85
Marion,O. P11 .....6.70
Newark,N.J. US .....7.55
Philadelphia B2 .....7.38
Pittsburgh J5, US .....7.10
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ...7.08
Williamsport,Pa. S19 ...7.00

**BARS, Wrought Iron**

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 .18.45

**RAIL STEEL BARS**

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4)(44) I-2.5.425
ChicagoHts.(4) C2 ... 5.425
Ft.Worth,Tex.(26) T4..5.875
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ...5.425
JerseyShore,Pa.(4) J8 ..5.10
Marion,O.(3) P11 .....5.325
Tonawanda(3) R12 ....5.325
Tonawanda(4) B12 ....6.00
Williamsport, Pa.(3)S19 5.50

## SHEETS

**SHEETS, Hot-Rolled Steel (18 Gage and Heavier)**

Ala.City,Ala. R2 .....4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 ....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 ....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.775
Gary,Ind. U5 .....4.925
Geneva,Utah C11 ....5.025
GraniteCity,Ill.(8) G4..5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ...4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .. ....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 ....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2..4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1..4.925

**SHEETS, H.R., (19 Ga.& Lighter)**

Niles,O. M21 .....6.05

**SHEETS, H.R. Alloy**

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ....8.10

**SHEETS, H.R. (14 Ga.& Heavier) High-Strength, Low-Alloy**

Cleveland J5, R2 ....7.275
Conshohocken,Pa. A3..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 ....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.125
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2,Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5,W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2..7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ..7.275

**SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)**

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

**SHEETS, Cold-Rolled Ingot Iron**

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

**SHEETS, Cold-Rolled Steel (Commercial Quality)**

Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 . 6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ...6.05
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 .....6.25
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..5.75
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 .....6.05
SparrowsPoint,Md. B2 ..5.75
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

**SHEETS, Cold-Rolled High-Strength, Low-Alloy**

Cleveland J5, R2 .....8.975
Ecorse,Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ...10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2 8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

**SHEETS, Culvert**

| | Cu Steel | Cu Fe |
|---|---|---|
| Ashland,Ky. A10 | 6.95 | 7.20 |
| Canton,O. R2 | 6.95 | 7.45 |
| Fairfield T2 | 6.95 | 7.20 |
| Gary,Ind. U5 | 6.95 | 7.20 |
| GraniteCity,Ill. G4 | 7.15 | ... |
| Ind.Harbor I-2 | 6.95 | 7.20 |
| Irvin,Pa. U5 | 6.95 | 7.20 |
| Kokomo,Ind. C16 | 7.05 | ... |
| MartinsFry. W10 | 6.95 | 7.20 |
| Pittsburgh J5 | 6.65 | ... |
| Pitts.,Calif. C11 | 7.70 | ... |
| SparrowsPt. B2 | 6.95 | ... |

**SHEETS, Culvert—Pure Iron**

Ind.Harbor,Ind. I-2 ... 7.20

**SHEETS, Galvanized Steel Hot-Dipped**

Ala.City,Ala. R2 .....6.60‡
Ashland,Ky. A10 ....6.60†
Canton,O. R2 .....6.60‡
Dover,O. R1 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60*
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ...6.60†
Irvin,Pa. U5 .....6.60*
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 .6.60*
Middletown,O. A10 ..6.60†
Pittsburg,Calif. C11 ..7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ...6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

**SHEETS, Well Casing**

Fontana,Calif. K1 ....7.275

**SHEETS, Galvanized High-Strength, Low-Alloy**

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ...9.725

**SHEETS, Galvannealed Steel**

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

**SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)**

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

**SHEETS, Electrogalvanized**

Cleveland(28) R2 .....7.425
Niles,O.(28) R2 .....7.425
*Weirton,W.Va. W6 ....7.275*

**SHEETS, Aluminum Coated**

Butler,Pa. A10 (type 1).9.25
Butler,Pa. A10 (type 2).9.35

**SHEETS, Enameling Iron**

Ashland,Ky. A10 ....6.625
Cleveland R2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2,Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

**BLUED STOCK, 29 Gage**

Follansbee,W.Va. F4 ...8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 ....8.475

**SHEETS, Long Terne Steel (Commercial Quality)**

BeechBottom,W.Va.W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, S3 .....7.00
Warren,O. R2 .....7.00
Weirton,W.Va. W6 ....7.00

**SHEETS, Long Terne, Ingot Iron**

Middletown,O. A10 .....7.40

## Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U.S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C7 Cleve. Cold Rolling Mills
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Dearborn Division Sharon Steel Corp.
D4 Disston Division, H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 EasternGas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Division, Merritt-Chapman&Scott
M21 Mallory-Sharon Titanium Corp.
M22 Mill Strip Products Co.

N1 National Standard Co.
N2 National Supply Co.
N3 National Tube Div., U.S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest.SteelRoll.Mill
N15 Northwestern S.&W. Co.
N19 Northeastern Steel Corp.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.

T2 Tenn. Coal & Iron Div., U.S. Steel Corp.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U.S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U.S. Steel Supply Div., U.S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Div., H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

## STRIP

**STRIP, Hot-Rolled Carbon**

| | |
|---|---|
| Ala.City,Ala.(27) R2 | 4.925 |
| Allenport,Pa. P7 | 4.925 |
| Alton,Ill. L1 | 5.125 |
| Ashland,Ky.(8) A10 | 4.925 |
| Atlanta A11 | 5.125 |
| Bessemer,Ala. T2 | 4.925 |
| Birmingham C15 | 4.925 |
| Buffalo(27) R2 | 4.925 |
| Conshohocken,Pa. A3 | 4.975 |
| Detroit M1 | 5.025 |
| Ecorse,Mich. G5 | 5.025 |
| Fairfield,Ala. T2 | 4.925 |
| Fontana,Calif. K1 | 5.775 |
| Gary,Ind. U5 | 4.925 |
| Houston S5 | 5.175 |
| Ind.Harbor,Ind. I-2, Y1 | 4.925 |
| Johnstown,Pa.(25) B2 | 4.925 |
| KansasCity,Mo. S5 | 5.175 |
| Lackaw'na,N.Y.(25) B2 | 4.925 |
| LosAngeles(25) B3 | 5.675 |
| Minnequa,Colo. C10 | 6.025 |
| Pittsburg,Calif. C11 | 5.675 |
| Riverdale,Ill. A1 | 4.925 |
| SanFrancisco S7 | 6.35 |
| Seattle(25) B3 | 5.925 |
| **Seattle N14** | **5.675** |
| Sharon,Pa. S3 | 4.925 |
| S.SanFrancisco(25) B3 | 5.675 |
| SparrowsPoint,Md. B2 | 4.925 |
| Sterling,Ill.(1) N15 | 4.925 |
| Sterling,Ill. N15 | 5.025 |
| Torrance,Calif. C11 | 5.675 |
| Warren,O. R2 | 4.925 |
| Weirton,W.Va. W6 | 4.925 |
| Youngstown U5 | 4.925 |

**STRIP, Hot-Rolled Alloy**

| | |
|---|---|
| Carnegie,Pa. S18 | 8.10 |
| Farrell,Pa. S3 | 8.10 |
| Gary,Ind. U5 | 8.10 |
| Houston S5 | 8.35 |
| Ind.Harbor,Ind. Y1 | 8.10 |
| KansasCity,Mo. S5 | 8.35 |
| LosAngeles B3 | 9.30 |
| Lowellville,O. S3 | 8.10 |
| Newport,Ky. A2 | 8.10 |
| Sharon,Pa. S3 | 8.10 |
| S.Chicago,Ill. W14 | 8.10 |
| Youngstown U5, Y1 | 8.10 |

**STRIP, Hot-Rolled High-Strength, Low-Alloy**

| | |
|---|---|
| Bessemer,Ala. T2 | 7.325 |
| Conshohocken,Pa. A3 | 7.325 |
| Ecorse,Mich. G5 | 7.425 |
| Fairfield,Ala. T2 | 7.325 |
| Farrell,Pa. S3 | 7.325 |
| Gary,Ind. U5 | 7.325 |
| Houston S5 | 7.575 |
| Ind.Harbor,Ind. I-2, Y1 | 7.325 |
| KansasCity,Mo. S5 | 7.575 |
| Lackawanna,N.Y. B2 | 7.325 |
| LosAngeles(25) B3 | 8.075 |
| Seattle(25) B3 | 8.325 |
| Sharon,Pa. S3 | 7.325 |
| S.Chicago,Ill. W14 | 7.325 |
| S.SanFrancisco(25) B3 | 8.075 |
| SparrowsPoint,Md. B2 | 7.325 |
| Warren,O. R2 | 7.325 |
| Weirton,W.Va. W6 | 7.325 |
| Youngstown U5, Y1 | 7.325 |

**STRIP, Hot-Rolled Ingot Iron**

| | |
|---|---|
| Ashland,Ky.(8) A10 | 5.175 |
| Warren,O. R2 | 5.675 |

**STRIP, Cold-Rolled Carbon**

| | |
|---|---|
| Anderson,Ind. G6 | 7.15 |
| Baltimore T6 | 7.15 |
| Boston T6 | 7.70 |
| Buffalo S40 | 7.15 |
| Cleveland A7, J5 | 7.15 |
| Conshohocken,Pa. A3 | 7.20 |
| Dearborn,Mich. D3 | 7.25 |
| Detroit D2, M1, P20 | 7.25 |
| Dover,O. G6 | 7.15 |
| Ecorse,Mich. G5 | 7.25 |
| Evanston,Ill. M22 | 7.25 |
| Follansbee,W.Va. F4 | 7.15 |
| Fontana,Calif. K1 | 9.00 |
| FranklinPark,Ill. T6 | 7.25 |
| Ind.Harbor,Ind. Y1 | 7.15 |
| Indianapolis C8 | 7.30 |
| LosAngeles C1 | 9.20 |
| NewBedford,Mass. R10 | 7.60 |
| *NewBritain(10) S15* | *7.15* |
| NewCastle,Pa. B4, E5 | 7.15 |
| NewHaven,Conn. D2 | 7.60 |
| NewKensington,Pa. A6 | 7.15 |
| Pawtucket,R.I. R3 | 7.80 |
| Pawtucket,R.I. N8 | 7.70 |
| Philadelphia(45) P24 | 7.70 |
| Pittsburgh J5 | 7.15 |
| Riverdale,Ill. A1 | 7.25 |
| Rome,N.Y.(32) R6 | 7.15 |
| Sharon,Pa. S3 | 7.15 |
| Trenton,N.J.(31) R5 | 8.60 |
| Wallingford,Conn. W2 | 7.60 |
| Warren,O. R2, T5 | 7.15 |
| Weirton,W.Va. W6 | 7.15 |
| Worcester,Mass. A7 | 7.70 |
| Youngstown J5, Y1 | 7.15 |

**STRIP, Cold-Rolled Alloy**

| | |
|---|---|
| Boston T6 | 15.40 |
| Carnegie,Pa. S18 | 15.05 |
| Cleveland A7 | 15.25 |
| Dover,O. G6 | 15.05 |
| Farrell,Pa. S3 | 15.05 |
| FranklinPark,Ill. T6 | 15.05 |
| *Harrison,N.J. C18* | *15.05* |
| Indianapolis C8 | 14.70 |
| Lowellville,O. S3 | 15.05 |
| Pawtucket,R.I. N8 | 15.40 |
| Riverdale,Ill. A1 | 15.05 |
| Sharon,Pa. S3 | 15.05 |
| Worcester,Mass. A7 | 15.55 |
| Youngstown J5 | 14.55 |

**STRIP, Cold-Rolled High-Strength, Low-Alloy**

| | |
|---|---|
| Cleveland A7 | 10.45 |
| Dearborn,Mich. D3 | 10.60 |
| Dover,O. G6 | 10.45 |
| Ecorse,Mich. G5 | 10.55 |
| Farrell,Pa. S3 | 10.50 |
| Ind.Harbor,Ind. Y1 | 10.65 |
| Sharon,Pa. S3 | 10.50 |
| Warren,O. R2 | 10.45 |

**STRIP, Cold-Finished Spring Steel (Annealed)**

| | 0.26-0.40C | 0.41-0.60C | 0.61-0.80C | 0.81-1.05C | 1.06-1.35C |
|---|---|---|---|---|---|
| Baltimore T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Boston T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Bristol,Conn. W1 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Carnegie,Pa. S18 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| Cleveland A7 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Dearborn,Mich. D3 | 9.05 | 10.50 | 12.70 | .... | .... |
| Detroit D2 | 9.05 | 10.50 | 12.70 | 15.70 | .... |
| Dover,O. G6 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Evanston,Ill. M22 | 8.95 | 10.40 | 12.60 | .... | .... |
| *Fostoria,O. S1* | *10.05* | *11.15* | *13.10* | *18.30* | |
| FranklinPark,Ill. T6 | 9.05 | 10.40 | 12.60 | 15.60 | 18.55 |
| *Harrison,N.J. C18* | | | *12.90* | *16.10* | *19.30* |
| Indianapolis J5 | 9.10 | 10.55 | 12.60 | 15.60 | 18.55 |
| LosAngeles C1 | 11.15 | 12.60 | 14.80 | 17.80 | .... |
| NewBritain,Conn.(10) S15 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| NewCastle,Pa. B4, E5 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| NewHaven,Conn. D2 | 9.40 | 10.70 | 12.90 | 15.90 | .... |
| NewKensington,Pa. A6 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| NewYork W3 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Pawtucket,R.I. N8 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Riverdale,Ill. A1 | 9.05 | 10.40 | 12.60 | 15.60 | 18.55 |
| Rome,N.Y.(32) R6 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Sharon,Pa. S3 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Trenton,N.J. R5 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Wallingford,Conn. W2 | 9.40 | 10.70 | 12.90 | 15.90 | 18.75 |
| Warren,O. T5 | 8.65 | 10.10 | 12.30 | 15.30 | 18.25 |
| Worcester,Mass. A7, T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Youngstown J5 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |

**Spring Steel (Tempered)**

| | Up to 0.80C | 0.81-1.05C | 1.06-1.35C |
|---|---|---|---|
| Bristol,Conn. W1 | 18.10 | 21.95 | 26.30 |
| Buffalo W12 | 17.10 | .... | .... |
| *Fostoria,O. S1* | *18.30* | *22.15* | |
| FranklinPark,Ill. T6 | 17.45 | 21.30 | 25.65 |
| *Harrison,N.J. C18* | *18.10* | *21.95* | *26.30* |
| NewYork W3 | 18.10 | 21.95 | 26.30 |
| Palmer,Mass. W12 | 17.10 | .... | .... |
| Trenton,N.J. R5 | 18.10 | 21.95 | 26.30 |
| Worcester,Mass. A7, T6 | 17.10 | 20.95 | 25.30 |
| Youngstown J5 | 17.45 | 21.30 | 25.65 |

Weirton,W.Va. W6 ... 10.45
Youngstown Y1 ... 10.65

**STRIP, Cold-Rolled Ingot Iron**

| | |
|---|---|
| Warren,O. R2 | 7.90 |

**STRIP, C.R. Electrogalvanized**

| | |
|---|---|
| Cleveland A7 | 7.15* |
| Dover,O. G6 | 7.15* |
| Evanston,Ill. M22 | 7.25* |
| Riverdale,Ill. A1 | 7.25* |
| Warren,O. B9, T5 | 7.15* |
| Worcester,Mass. A7 | 7.70* |
| Youngstown J5 | 6.85* |

*Plus galvanizing extras.

**STRIP, Galvanized (Continuous)**

| | |
|---|---|
| Sharon,Pa. S3 | 7.275 |

**TIGHT COOPERAGE HOOP**

| | |
|---|---|
| Atlanta A11 | 5.65 |
| Riverdale,Ill. A1 | 5.50 |
| Sharon,Pa. S3 | 5.35 |
| Youngstown U5 | 5.35 |

## SILICON STEEL

| H.R. SHEETS(22 Ga.,cut lengths) | Field | Armature | Electric | Motor | Dynamo |
|---|---|---|---|---|---|
| BeechBottom,W.Va. W10 | .... | .... | 11.80 | 12.90 | 13.95 |
| Mansfield,O. E6 | 9.625 | 11.10 | 11.80 | 12.90 | 13.95 |
| Newport,Ky. A2 | 9.625 | 11.10 | 11.80 | 12.90 | 13.95 |
| Niles,O. M21, S3 | 9.625 | 11.10 | 11.80 | 12.90 | .... |
| Vandergrift,Pa. U5 | .... | 11.10 | 11.80 | 12.90 | 13.95 |
| Warren,O. R2 | 9.625 | 11.10 | 11.80 | 12.90 | .... |
| Zanesville,O. A10 | .... | 11.10 | 11.80 | 12.90 | 13.95 |
| Zanesville,O. A10 (SP coils) | .... | .... | 11.55 | 12.65 | 13.70 |

**C.R. COILS & CUT LENGTHS (22 Ga.)**

| Fully Processed (Semiprocessed ½c lower) | Field | Armature | Electric | Motor | Dynamo |
|---|---|---|---|---|---|
| Brackenridge,Pa. A4 | .... | .... | 12.05 | 13.15 | 14.20 |
| GraniteCity,Ill. G4 | 9.825* | 11.05* | 11.75* | 12.85* | .... |
| IndianaHarbor,Ind. I-2 | 9.625† | 10.85* | 11.55* | 12.65* | .... |
| Mansfield,O. E6 | 9.625* | 11.35 | 12.05 | 13.50 | 14.20 |
| Vandergrift,Pa. U5 | 9.625* | 11.35 | 12.05 | 13.15 | 14.20 |
| Warren,O. R2 | 9.625* | 11.35 | 12.05 | 13.15 | 14.20 |
| Zanesville,O. A10 (FP coils) | .. | 11.35 | 12.05 | 13.15 | 14.20 |

| H.R. SHEETS (22 Ga., cut lengths) | Transformer Grades T-72 | T-65 | T-58 | T-52 |
|---|---|---|---|---|
| BeechBottom,W.Va. W10 | 15.00 | 15.55 | 16.05 | 17.10 |
| Vandergrift,Pa. U5 | 14.75 | 15.55 | 16.05 | 17.10 |
| Zanesville,O. A10 | 15.00 | 15.55 | 16.05 | 17.10 |

| C.R. COILS & CUT LENGTHS (22 Ga.) | Grain Oriented T-100 | T-90 | T-80 | T-73 | T-66 | T-72 |
|---|---|---|---|---|---|---|
| Brackenridge,Pa. A4 | .... | 17.60 | 19.20 | 19.70 | 20.20 | .... |
| Butler,Pa. A10 | .... | .... | 19.20 | 19.70 | 20.20 | .... |
| Vandergrift,Pa. U5 | 16.60 | 17.60 | 19.20 | 19.70 | 20.20 | 15.25** |
| Warren,O. R2 | .... | .... | .... | .... | .... | 15.25‡ |
| Zanesville,O. A10 | .. | .... | .... | 19.20 | 19.70 | 20.20 | .... |

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower.

## TIN MILL PRODUCTS

| TIN PLATE, Electrolytic (Base Box) | 0.25 lb | 0.50 lb | 0.75 lb |
|---|---|---|---|
| Aliquippa,Pa. J5 | $8.75 | $9.00 | $9.40 |
| Fairfield,Ala. T2 | 8.85 | 9.10 | 9.50 |
| Fairless,Pa. U5 | 8.85 | 9.10 | 9.50 |
| Fontana,Calif. K1 | 9.50 | 9.75 | 10.15 |
| Gary,Ind. U5 | 8.75 | 9.00 | 9.40 |
| GraniteCity,Ill. G4 | 8.85 | 9.10 | 9.50 |
| IndianaHarbor,Ind. I-2, Y1 | 8.75 | 9.00 | 9.40 |
| Irvin,Pa. U5 | 8.75 | 9.00 | 9.40 |
| Niles,O. R2 | 8.75 | 9.00 | 9.40 |
| Pittsburg,Calif. C11 | 9.50 | 9.75 | 10.15 |
| SparrowsPoint,Md. B2 | 8.85 | 9.10 | 9.50 |
| Weirton,W.Va. W6 | 8.75 | 9.00 | 9.40 |
| Yorkville,O. W10 | 8.75 | 9.00 | 9.40 |

**ELECTROTIN (22-27 Gage; Dollars per 100 lb)**

| | | | |
|---|---|---|---|
| Aliquippa,Pa. J5 | 7.725 | 7.925 | .... |
| Niles,O. R2 | 7.725 | 7.925 | 8.125 |

**TINPLATE, American**

| | 1.25 lb | 1.50 lb |
|---|---|---|
| Aliquippa,Pa. J5 | $10.05 | $10.30 |
| Fairfield,Ala. T2 | 10.15 | 10.40 |
| Fairless,Pa. U5 | 10.15 | 10.40 |
| Fontana,Calif. K1 | 10.80 | 11.05 |
| Gary,Ind. U5 | 10.05 | 10.30 |
| Irvin,Pa. U5 | 10.05 | 10.30 |
| Pitts.,Calif. C11 | 10.80 | 11.05 |
| Sp.Pt.,Md. B2 | 10.15 | 10.40 |
| Weirton,W.Va. W6 | 10.05 | 10.30 |
| Yorkville,O. W10 | 10.05 | 10.30 |

**BLACK PLATE (Base Box)**

| | |
|---|---|
| Aliquippa,Pa. J5 | $7.85 |
| Fairfield,Ala. T2 | 7.95 |
| Fairless,Pa. U5 | 7.95 |
| Fontana,Calif. K1 | 8.60 |
| Gary,Ind. U5 | 7.85 |
| GraniteCity,Ill. G4 | 7.95 |
| Ind.Harbor,Ind. I-2, Y1 | 7.85 |
| Irvin,Pa. U5 | 7.85 |
| Niles,O. R2 | 7.85 |
| Pittsburg,Calif. C11 | 8.60 |
| SparrowsPoint,Md. B2 | 7.95 |
| Weirton,W.Va. W6 | 7.85 |
| Yorkville,O. W10 | 7.85 |

**HOLLOWARE ENAMELING Black Plate (29 Gage)**

| | |
|---|---|
| Aliquippa,Pa. J5 | $7.50 |
| Gary,Ind. U5 | 7.50 |
| GraniteCity,Ill. G4 | 7.60 |
| Ind.Harbor,Ind. Y1 | 7.50 |
| Irvin,Pa. U5 | 7.50 |
| Yorkville,O. W10 | 7.50 |

**MANUFACTURING TERNES (Special Coated, Base Box)**

| | |
|---|---|
| Gary,Ind. U5 | $9.70 |
| Irvin,Pa. U5 | 9.70 |

**ROOFING SHORT TERNES (8 lb Coated, Base Box)**

| | |
|---|---|
| Gary,Ind. U5 | $11.25 |

## WIRE

**WIRE, Manufacturers Bright, Low Carbon**

| | |
|---|---|
| AlabamaCity,Ala. R2 | 7.65 |
| Aliquippa,Pa. J5 | 7.65 |
| Alton,Ill. L1 | 7.85 |
| Atlanta A11 | 7.85 |
| Bartonville,Ill. K4 | 7.75 |
| Buffalo W12 | 7.20 |
| Chicago W13 | 7.65 |
| Cleveland C20 | 7.20 |
| Cleveland A7 | 7.65 |
| Crawfordsville,Ind. M8 | 7.75 |
| Donora,Pa. A7 | 7.65 |
| Duluth A7 | 7.65 |
| Fairfield,Ala. T2 | 7.65 |
| Fostoria,O.(24) S1 | 7.75 |
| Houston S5 | 7.90 |
| Jacksonville,Fla. M8 | 8.00 |
| Johnstown,Pa. B2 | 7.65 |
| Joliet,Ill. A7 | 7.65 |
| KansasCity,Mo. S5 | 7.90 |
| Kokomo,Ind. C16 | 7.75 |
| LosAngeles B3 | 8.60 |
| Minnequa,Colo. C10 | 7.90 |
| Monessen,Pa. P7, P16 | 7.65 |
| N.Tonawanda,N.Y. B11 | 7.20 |
| Palmer,Mass. W12 | 7.50 |
| Pittsburg,Calif. C11 | 8.60 |
| Portsmouth,O. P12 | 7.65 |
| Rankin,Pa. A7 | 7.65 |
| S.Chicago,Ill. R2 | 7.65 |
| S.SanFrancisco C10 | 8.60 |
| SparrowsPoint,Md. B2 | 7.75 |
| Sterling,Ill.(1) N15 | 7.65 |
| Sterling,Ill. N15 | 7.75 |
| Struthers,O. Y1 | 7.65 |
| Waukegan,Ill. A7 | 7.65 |
| Worcester,Mass. A7 | 7.95 |

**WIRE, Gal'd ACSR for Cores**

| | |
|---|---|
| Bartonville,Ill. K4 | 12.65 |
| Buffalo W12 | 11.90 |
| Cleveland A7 | 12.65 |
| Donora,Pa. A7 | 12.65 |
| Duluth A7 | 12.65 |
| Johnstown,Pa. B2 | 12.65 |
| Minnequa,Colo. C10 | 12.775 |
| Monessen,Pa. P16 | 12.65 |
| Muncie,Ind. I-7 | 12.85 |
| NewHaven,Conn. A7 | 12.95 |
| Palmer,Mass. W12 | 12.20 |
| Pittsburg,Calif. C11 | 13.45 |
| Portsmouth,O. P12 | 11.90 |
| Roebling,N.J. R5 | 12.95 |
| SparrowsPt.,Md. B2 | 12.75 |
| Struthers,O. Y1 | 12.65 |
| Trenton,N.J. A7 | 12.95 |
| Waukegan,Ill. A7 | 12.65 |
| Worcester,Mass. A7 | 12.95 |

**WIRE, Upholstery Spring**

| | |
|---|---|
| Aliquippa,Pa. J5 | 9.30 |
| Alton,Ill. L1 | 9.50 |
| Buffalo W12 | 8.70 |
| Cleveland A7 | 9.30 |
| Donora,Pa. A7 | 9.30 |
| Duluth A7 | 9.30 |
| Johnstown,Pa. B2 | 9.30 |
| KansasCity,Mo. S5 | 9.55 |
| LosAngeles B3 | 10.25 |
| Minnequa,Colo. C10 | 9.50 |
| Monessen,Pa. P7, P16 | 9.30 |
| NewHaven,Conn. A7 | 9.60 |
| Palmer,Mass. W12 | 9.00 |
| Pittsburg,Calif. C11 | 10.25 |
| Portsmouth,O. P12 | 9.30 |
| Roebling,N.J. R5 | 9.60 |
| S.Chicago,Ill. R2 | 9.30 |
| S.SanFrancisco C10 | 10.25 |
| SparrowsPt.,Md. B2 | 9.40 |
| Struthers,O. Y1 | 9.30 |
| Trenton,N.J. A7 | 9.60 |
| Waukegan,Ill. A7 | 9.30 |
| Worcester,Mass. A7, J4 | 9.60 |

**WIRE, Fine & Weaving(8" Coils)**

| | |
|---|---|
| Alton,Ill. L1 | 15.80 |
| Bartonville,Ill. K4 | 15.70 |
| Buffalo W12 | 14.45 |
| Chicago W13 | 15.60 |
| Cleveland A7 | 15.60 |
| Crawfordsville,Ind. M8 | 15.70 |
| Fostoria,O. S1 | 15.60 |
| Houston S5 | 15.85 |
| Jacksonville,Fla. M8 | 15.95 |
| Johnstown,Pa. B2 | 15.60 |
| KansasCity,Mo. S5 | 15.85 |
| Kokomo,Ind. C16 | 15.60 |
| Minnequa,Colo. C10 | 15.85 |
| Monessen,Pa. P7 | 15.60 |
| Muncie,Ind. I-7 | 15.80 |
| Palmer,Mass. W12 | 14.75 |
| S.SanFrancisco C10 | 16.45 |
| Waukegan,Ill. A7 | 15.60 |
| Worcester,Mass. A7, T6 | 15.90 |

**ROPE WIRE**

| | |
|---|---|
| Bartonville,Ill. K4 | 12.75 |
| Buffalo W12 | 12.00 |
| Fostoria,O. S1 | 12.75 |
| Johnstown,Pa. B2 | 12.75 |
| *Monessen,Pa. P7* | *12.75* |
| Muncie,Ind. I-7 | 12.95 |
| Palmer,Mass. W12 | 12.30 |
| Portsmouth,O. P12 | 12.75 |
| Roebling,N.J. R5 | 13.05 |
| SparrowsPt.,Md. B2 | 12.85 |
| Struthers,O. Y1 | 12.75 |
| Worcester,Mass. J4 | 13.05 |

(A) Plow and Mild Plow; add 0.25c for Improved Plow

**WIRE, Tire Bead**

| | |
|---|---|
| Bartonville,Ill. K4 | 16.55 |
| Monessen,Pa. P16 | 15.45 |
| Roebling,N.J. R5 | 17.05 |

**WIRE, Cold-Rolled Flat**

| | |
|---|---|
| Anderson,Ind. G6 | 11.65 |
| Baltimore T6 | 11.95 |
| Boston T6 | 11.95 |
| Buffalo W12 | 10.75 |
| Chicago W13 | 11.75 |
| Cleveland A7 | 11.65 |
| Crawfordsville,Ind. MS | 11.65 |
| Dover,O. G6 | 11.65 |
| *Fostoria,O. S1* | *11.95* |
| FranklinPark,Ill. T6 | 11.75 |
| Kokomo,Ind. C16 | 11.65 |
| Massillon,O. R8 | 11.65 |
| *Milwaukee C23* | *11.85* |
| Monessen,Pa. P7, P16 | 11.65 |
| Palmer,Mass. W12 | 11.05 |
| Pawtucket,R.I. N8 | 11.95 |
| Philadelphia P24 | 11.95 |
| Riverdale,Ill. A1 | 11.75 |
| Rome,N.Y. R6 | 11.65 |
| Sharon,Pa. S3 | 11.65 |
| Trenton,N.J. R5 | 11.95 |
| Warren,O. B9 | 11.65 |
| Worcester,Mass. A7, T6 | 11.95 |

**NAILS, Stock**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 173 |
| Aliquippa,Pa. J5 | 173 |
| Atlanta A11 | 173 |
| Bartonville,Ill. K4 | 175 |
| Chicago W13 | 173 |
| Cleveland A9 | 173 |
| Crawfordsville,Ind. MS | 175 |
| Donora,Pa. A7 | 173 |
| Duluth A7 | 173 |
| Houston,Tex. S5 | 178 |
| Fairfield,Ala. T2 | 173 |
| Jacksonville,Fla.(20) MS | 184 |
| Joliet,Ill. A7 | 173 |
| Johnstown,Pa. B2 | 173 |
| KansasCity,Mo. S5 | 178 |
| Kokomo,Ind. C16 | 175 |
| Minnequa,Colo. C10 | 178 |
| Monessen,Pa. P7 | 173 |
| Pittsburg,Calif. C11 | 192 |
| Rankin,Pa. A7 | 173 |
| S.Chicago,Ill. R2 | 173 |
| SparrowsPt.,Md. B2 | 175 |
| Sterling,Ill.(7) N15 | 175 |
| Worcester,Mass. A7 | 179 |

**(To Wholesalers; per cwt)**

| | |
|---|---|
| Galveston,Tex. D7 | $8.95 |

**NAILS, Cut (100 lb keg)**
**To Dealers (33)**

| | |
|---|---|
| Conshohocken,Pa. A3 | $9.80 |
| Wheeling,W.Va. W10 | 9.80 |

**POLISHED STAPLES**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 175 |
| Aliquippa,Pa. J5 | 175 |
| Atlanta A11 | 177 |
| Bartonville,Ill. K4 | 177 |
| Crawfordsville,Ind. MS | 177 |
| Donora,Pa. A7 | 175 |
| Duluth A7 | 175 |
| Fairfield,Ala. T2 | 175 |
| Jacksonville,Fla.(20) MS | 186 |
| Joliet,Ill. A7 | 175 |
| Johnstown,Pa. B2 | 175 |
| *Kokomo,Ind. C16* | *177* |
| Minnequa,Colo. C10 | 180 |
| Pittsburg,Calif. C11 | 194 |
| Rankin,Pa. A7 | 175 |
| S.Chicago,Ill. R2 | 175 |
| SparrowsPt.,Md. B2 | 177 |
| Sterling(7) N15 | 175 |
| Worcester,Mass. A7 | 181 |

**TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)**
**Coil No. 3150**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.26 |
| Atlanta A11 | 10.36 |
| Bartonville,Ill. K4 | 10.36 |
| Buffalo W12 | 9.82 |
| Chicago W13 | 10.26 |
| Crawfordsville,Ind. MS | 10.36 |
| Donora,Pa. A7 | 10.26 |
| Duluth A7 | 10.26 |
| Fairfield,Ala. T2 | 10.26 |
| Houston S5 | 10.51 |
| Jacksonville,Fla. MS | 10.82 |
| Johnstown,Pa. B2 | 10.26 |
| Joliet,Ill. A7 | 10.26 |
| KansasCity,Mo. S5 | 10.51 |
| Kokomo,Ind. C16 | 10.36 |
| LosAngeles B3 | 11.05 |
| Minnequa,Colo. C10 | 10.51 |
| Pittsburg,Calif. C11 | 11.04 |
| S.Chicago,Ill. R2 | 10.26 |
| S.SanFraicisco C10 | 11.04 |
| SparrowsPt.,Md. B2 | 10.36 |
| Sterling,Ill.(3?) N15 | 10.36 |

**Coil No. 6500 Stand.**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.60 |
| Atlanta A11 | 10.70 |
| Bartonville,Ill. K4 | 10.70 |
| Buffalo W12 | 10.15 |
| Chicago W13 | 10.60 |
| Crawfordsville,Ind. MS | 10.70 |
| Donora,Pa. A7 | 10.60 |
| Duluth A7 | 10.60 |
| Fairfield,Ala. T2 | 10.60 |
| Houston S5 | 10.85 |
| Jacksonville,Fla. MS | 11.16 |
| Johnstown,Pa. B2 | 10.60 |
| Joliet,Ill. A7 | 10.60 |
| KansasCity,Mo. S5 | 10.85 |
| Kokomo,Ind. C16 | 10.70 |
| LosAngeles B3 | 11.40 |
| Minnequa,Colo. C10 | 10.85 |
| Pittsburg,Calif. C11 | 11.40 |
| S.Chicago,Ill. R2 | 10.60 |
| S.SanFrancisco C10 | 11.40 |
| SparrowsPt.,Md. B2 | 10.70 |
| Sterling,Ill.(37) N15 | 10.70 |

**Coil No. 6500 Interim**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.65 |
| Atlanta A11 | 10.75 |
| Bartonville,Ill. K4 | 10.75 |
| Buffalo W12 | 10.20 |
| Chicago W13 | 10.65 |
| Crawfordsville,Ind. MS | 10.75 |
| Donora,Pa. A7 | 10.65 |
| Duluth A7 | 10.65 |
| Fairfield,Ala. T2 | 10.65 |
| Houston S5 | 10.90 |
| Jacksonville,Fla. MS | 11.21 |
| Johnstown,Pa. B2 | 10.65 |
| Joliet,Ill. A7 | 10.65 |
| KansasCity,Mo. S5 | 10.90 |
| Kokomo,Ind. C16 | 10.75 |
| LosAngeles B3 | 11.45 |
| Minnequa,Colo. C10 | 10.90 |
| Pittsburg,Calif. C11 | 11.45 |
| S.Chicago,Ill. R2 | 10.65 |
| S.SanFrancisco C10 | 11.45 |
| SparrowsPt.,Md. B2 | 10.75 |
| Sterling,Ill.(37) N15 | 10.75 |

**BALE TIES, Single Loop**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 212 |
| Atlanta A11 | 214 |
| Bartonville,Ill. K4 | 214 |
| Crawfordsville,Ind. MS | 214 |
| Donora,Pa. A7 | 212 |
| Duluth A7 | 212 |
| Fairfield,Ala. T2 | 212 |
| Houston S5 | 217 |
| Jacksonville,Fla. MS | 219 |
| Joliet,Ill. A7 | 212 |
| KansasCity,Mo. S5 | 217 |
| Kokomo,Ind. C16 | 214 |
| Minnequa,Colo. C10 | 217 |
| Pittsburg,Calif. C11 | 236 |
| S.SanFrancisco C10 | 236 |
| Sterling,Ill.(7) N15 | 214 |
| SparrowsPt.,Md. B2 | 214 |
| Tonawanda,N.Y. B12 | 169 |
| Williamsport,Pa. S19 | 175 |

**FENCE POSTS**

| | |
|---|---|
| Birmingham C15 | 171 |
| ChicagoHts.,Ill. C2, I-2 | 172 |
| Duluth A7 | 172 |
| Franklin,Pa. F5 | 172 |
| Huntington,W.Va. C15 | 171 |
| Johnstown,Pa. B2 | 172 |
| Marion,O. P11 | 172 |
| Minnequa,Colo. C10 | 177 |
| Sterling,Ill.(6) N15 | 172 |
| Tonawanda,N.Y. B12 | 174 |

**WIRE, Barbed**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 193** |
| Aliquippa,Pa. J5 | 190§ |
| Atlanta A11 | 198* |
| Bartonville,Ill. K4 | 198 |
| Crawfordsville,Ind. MS | 198 |
| Donora,Pa. A7 | 193† |
| Duluth A7 | 193† |
| Fairfield,Ala. T2 | 193† |
| Houston,Tex. S5 | 198** |
| Jacksonville,Fla. MS | 203 |
| Johnstown,Pa. B2 | 196§ |
| Joliet,Ill. A7 | 193† |
| KansasCity,Mo. S5 | 198** |
| Kokomo,Ind. C16 | 195† |
| Minnequa,Colo. C10 | 198** |
| Monessen,Pa. P7 | 196* |
| Pittsburg,Calif. C11 | 213† |
| Rankin,Pa. A7 | 193† |
| S.Chicago,Ill. R2 | 193** |
| S.SanFrancisco C10 | 213** |
| SparrowsPoint,Md. B2 | 198§ |
| Sterling,Ill.(7) N15 | 198§ |

**WOVEN FENCE, 9-15 Ga.**

| | Col. |
|---|---|
| Ala.City,Ala. R2 | 187** |
| Aliq'ppa,Pa.9-14½ga.J5 | 190§ |
| Atlanta A11 | 192* |
| Bartonville,Ill. K4 | 192 |
| Crawfordsville,Ind. MS | 192 |
| Donora,Pa. A7 | 187† |
| Duluth A7 | 187† |
| Fairfield,Ala. T2 | 187† |
| Houston,Tex. S5 | 192** |
| Jacksonville,Fla. MS | 197 |
| Johnstown,Pa.(43) B2 | 190§ |
| Joliet,Ill. A7 | 187† |
| KansasCity,Mo. S5 | 192** |
| Kokomo,Ind. C16 | 189† |
| Minnequa,Colo. C10 | 192** |
| Pittsburg,Calif. C11 | 210† |
| Rankin,Pa. A7 | 187† |
| S.Chicago,Ill. R2 | 187** |
| Sterling,Ill.(7) N15 | 192§ |

| WIRE (16 gage) | An'ld Stone | Galv. Stone |
|---|---|---|
| Ala.City,Ala.R2 | 17.15 | 18.70** |
| Aliq'ppa,Pa. J5 | 15.70 | 17.50 |
| Bartonville K4 | 17.25 | 19.05 |
| Cleveland A7 | 17.15 | .... |
| Crawf'dsville MS | 17.25 | 19.05 |
| *Fostoria,O. S1* | *17.65* | *19.20†* |
| Houston S5 | 17.40 | 18.95** |
| Jacksonville MS | 17.50 | 19.30 |
| Johnstown B2 | 17.15 | 18.95§ |
| Kan.City,Mo. S5 | 17.40 | .... |
| Kokomo C16 | 17.25 | 18.80† |
| Minnequa C10 | 17.40 | 18.95** |
| P'lm'r,Mass. W12 | 16.30 | 17.85† |
| Pitts.,Calif. C11 | 17.50 | 19.05† |
| SparrowsPt. B2 | 17.25 | 19.05§ |
| Sterling(37) N15 | 17.25 | 19.05§ |
| Waukegan A7 | 17.15 | 18.70† |
| Worcester A7 | 17.45 | .... |

**WIRE, Merchant Quality**

| (6 to 8 gage) | An'ld Galv. |
|---|---|
| Ala.City,Ala. R2 | 8.65 9.20** |
| Aliquippa J5 | 8.65 9.325§ |
| Atlanta (48) A11 | 8.75 9.425* |
| Bartonville(48) K4 | 8.75 9.425 |
| Buffalo W12 | 8.20 8.75† |
| Cleveland A7 | 8.65 .... |
| Crawfordsville MS | 8.75 9.425 |
| Donora,Pa. A7 | 8.65 9.20† |
| Duluth A7 | 8.65 9.20† |
| Fairfield T2 | 8.65 9.20† |
| Houston(48) S5 | 8.90 9.45** |
| Jacks'ville,Fla. MS | 9.00 9.675 |
| Johnstown B2(48) | 8.65 9.325§ |
| Joliet,Ill. A7 | 8.65 9.20† |
| Kans.City(48) S5 | 8.90 9.45** |
| Kokomo C16 | 8.75 9.30† |
| LosAngeles B3 | 9.60 10.275§ |
| Minnequa C10 | 8.90 9.45** |
| Monessen P7(48) | 8.65 9.25* |
| Palmer,Mass. W12 | 8.50 9.05† |
| Pitts.,Calif. C11 | 9.60 10.15† |
| Rankin,Pa. A7 | 8.65 9.20† |
| S.Chicago R2 | 8.65 9.20** |
| S.SanFran. C10 | 9.60 10.15** |
| Spar'wsPt.B2(48) | 8.75 9.42?§ |
| Sterling(48) N15 | 8.90 9.575§ |
| Sterling(1)(48) | 8.80 9.475§ |
| Struth'rs,O.(48) Y1 | 8.65 9.30‡ |
| Worcester,Mass. A7 | 8.95 9.50† |

Based on zinc price of: *13.50c. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

## FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

**BOLTS**

**Carriage, Machine Bolts**

| Full Size Body (cut thread) | |
|---|---|
| ½ in. and smaller: | |
| 6 in. and shorter | 52.5 |
| Longer than 6 in. | 43.5 |
| ⅝ in. thru 1 in.: | |
| 6 in. and shorter | 43.5 |
| Longer than 6 in. | 41.5 |
| 1¼ in. and larger: | |
| All lengths | 41.5 |
| Undersized Body (rolled thread) | |
| ½ in. and smaller: | |
| 6 in. and shorter | 52.5 |

**Carriage, Machine, Lag Bolts Hot Galvanized:**

| | |
|---|---|
| ½ in. and smaller: | |
| 6 in. and shorter | 32.0 |
| Longer than 6 in. | 19.0 |
| ⅝ in. and larger: | |
| All lengths | 16.0 |

**Lag Bolts** (all diam.)

| | |
|---|---|
| 6 in. and shorter | 52.5 |
| Longer than 6 in. | 44.5 |

**Plow and Tap Bolts**

| | |
|---|---|
| ½ in. and smaller by 6 in. and shorter | 52.0 |
| Larger than ½ in. or longer than 6 in. | 44.5 |

| | |
|---|---|
| **Blank Bolts** | 44.5 |
| **Step, Elevator, Tire Bolts** | 52.0 |

**Stove Bolts, Slotted:**

| | |
|---|---|
| ⅛ to ¼-in. incl.: | |
| 3 in. and shorter | 54.00 |
| ⅛ to ½ in., inclusive | 54.00 |

**NUTS**

**Reg. & Heavy Square Nuts:**

| | |
|---|---|
| All sizes | 58.0 |

**Square Nuts, Reg. & Heavy, Hot Galvanized:**

| | |
|---|---|
| All sizes | 44.0 |

**Hex Nuts, Reg. & Heavy, Hot Pressed:**

| | |
|---|---|
| ¾ in. and smaller | 61.5 |
| ⅞ in. to 1 in., incl. | 57.5 |
| 1⅛ in. to 1½ in., incl. | 62.5 |
| 1⅝ in. and larger | 56.0 |

**Hex Nuts, Reg. & Heavy, Cold Punched:**

| | |
|---|---|
| ¾ in. and smaller | 61.5 |
| ⅞ in. to 1½ in., incl. | 57.5 |
| 1⅝ in. and larger | 56.0 |

**Hex Nuts, All Types, Hot Galvanized:**

| | |
|---|---|
| ¾ in. and smaller | 48.0 |
| ⅞ in. to 1 in., incl. | 44.0 |
| 1⅛ in. to 1½ in., incl. | 49.0 |

**Hex Nuts, Semifinished, Heavy (Incl. Slotted):**

| | |
|---|---|
| ¾ in. and smaller | 61.5 |
| ⅞ in. to 1½ in., incl. | 57.5 |
| 1⅝ in. and larger | 56.0 |

**Hex Nuts, Finished (Incl. Slotted and Castilated):**

| | |
|---|---|
| 1 in. and smaller | 64.0 |
| 1⅛ in. to 1½ in., incl. | 60.5 |
| 1⅝ in. and larger | 56.0 |

**Semifinished Hex Nuts, Reg. (Incl. Slotted):**

| | |
|---|---|
| ¾ in. and smaller | 61.5 |
| ¾ in. to 1 in., incl. | 64.0 |
| 1⅛ in. to 1½ in., incl. | 60.5 |
| 1⅝ in. and larger | 56.0 |

**CAP AND SETSCREWS**
(Base discounts, packages, per cent off list, f.o.b. mill)

**Hex Head Capscrews, Coarse or Fine Thread, Bright:**

| | |
|---|---|
| 6 in. and shorter: | |
| ¾ in. and smaller | 44.0 |
| ⅞, 1 and 1 in. diam. | 27.0 |
| Longer than 6 in.: | |
| ¾ in. and smaller | 14.0 |
| ⅞, 1 and 1 in. diam. | 0.5 |

**High Carbon, Heat Treated:**

| | |
|---|---|
| 6 in. and shorter: | |
| ¾ in. and smaller | 31.0 |
| ⅞, 1 and 1 in. diam. | 9.0 |
| Longer than 6 in.: | |
| ¾ in. and smaller | +6 |
| ⅞, 1 and 1 in. diam. | +24 |

| | |
|---|---|
| **Flat Head Capscrews:** | |
| ¾ in. and smaller | +65.0 |
| **Setscrews, Square Head, Cup Point, Coarse Thread:** | |
| Through 1 in. diam.: | |
| 6 in. and shorter | 11 |
| Longer than 6 in. | +10 |

## RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25
⅞ in. under list less 19%.

## BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

| O.D. In. | B.W. Gage | Seamless H.R. | Seamless C.D. | Elec. Weld H.R. |
|---|---|---|---|---|
| 1 | 13 | .... | 25.98 | 23.54 |
| 1¼ | 13 | .... | 30.78 | 23.36 |
| 1½ | 13 | 29.03 | 34.01 | 25.83 |
| 1¾ | 13 | 34.29 | 40.18 | 30.51 |
| 2 | 13 | 38.44 | 45.05 | 34.20 |
| 2¼ | 13 | 43.29 | 50.75 | 38.52 |
| 2¼ | 12 | 46.99 | 55.06 | 41.81 |
| 2½ | 12 | 51.76 | 60.65 | 46.05 |
| 2¾ | 12 | 56.04 | 65.67 | 49.88 |
| 3 | 12 | 59.76 | 70.03 | 53.19 |

## RAILWAY MATERIALS

| RAILS | Standard No. 1 | Standard No. 2 | Tee Rails All 60 lb Under |
|---|---|---|---|
| Bessemer,Pa. U5 | 5.525 | 5.425 | .... 6.50 |
| Ensley,Ala. T2 | 5.525 | 5.425 | .... 6.50 |
| Fairfield,Ala. T2 | .... | .... | .... 6.50 |
| Huntington,W.Va. C15 | .... | .... | .... 6.50 |
| Gary,Ind. U5 | 5.525 | 5.425 | .... .... |
| IndianaHarbor,Ind. I-2 | 5.525 | 5.425 | 5.475 .... |
| Johnstown,Pa. B2 | .... | .... | ....(16)6.50 |
| Lackawanna,N.Y. B2 | 5.525 | 5.525 | .... 6.50 |
| Minnequa,Colo. C10 | 5.525 | 5.425 | .... 7.00 |
| Steelton,Pa. B2 | 5.525 | 5.425 | .... .... |
| Williamsport,Pa. S19 | .... | .... | .... 6.50 |

**TIE PLATES**

| | |
|---|---|
| Fairfield,Ala. T2 | 6.60 |
| Gary,Ind. U5 | 6.60 |
| Ind.Harbor,Ind. I-2 | 6.60 |
| Lackawanna,N.Y. B2 | 6.60 |
| Minnequa,Colo. C10 | 6.60 |
| Seattle B3 | 6.75 |
| Steelton,Pa. B2 | 6.60 |
| Torrance,Calif. C11 | 6.75 |

**JOINT BARS**

| | |
|---|---|
| Bessemer,Pa. U5 | 6.975 |
| Fairfield,Ala. T2 | 6.975 |
| Ind.Harbor,Ind. I-2 | 6.975 |
| Joliet,Ill. U5 | 6.975 |
| Lackawanna,N.Y. B2 | 6.975 |
| Minnequa,Colo. C10 | 6.975 |
| Steelton,Pa. B2 | 6.975 |

**AXLES**

| | |
|---|---|
| Ind.Harbor,Ind. S13 | 8.775 |
| Johnstown,Pa. B2 | 8.775 |

**TRACK BOLTS, Untreated**

| | |
|---|---|
| Cleveland R2 | 14.75 |
| KansasCity,Mo. S5 | 14.75 |
| Lebanon,Pa. B2 | 14.75 |
| Minnequa,Colo. C10 | 14.75 |
| Pittsburgh P14 | 14.75 |
| Seattle B3 | 15.25 |

**SCREW SPIKES**

| | |
|---|---|
| Lebanon,Pa. B2 | 14.50 |

**STANDARD TRACK SPIKES**

| | |
|---|---|
| Fairfield,Ala. T2 | 9.75 |
| Ind.Harbor,Ind. I-2, Y1 | 9.75 |
| KansasCity,Mo. S5 | 9.75 |
| Lebanon,Pa. B2 | 9.75 |
| Minnequa,Colo. C10 | 9.75 |
| Pittsburgh J5 | 9.75 |
| Seattle B3 | 10.25 |
| S.Chicago,Ill. R2 | 9.75 |
| Struthers,O. Y1 | 9.75 |
| Youngstown R2 | 9.75 |

## Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 13 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 6.045c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.50c.
(31) Widths over ⅝-in.; 7.60c, for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(45) 0.022 in. and lighter, over 0.022", 8.20c.
(46) Special quality.
(48) 6-7 Ga.
(49) 3½-in. and smaller rounds; 8.65c, over 3½-in. and other shapes.

## SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| Size—Inches | 2 | | 2½ | | 3 | | 3½ | | 4 | | 5 | | 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 37c | | 58.5c | | 76.5c | | 92c | | $1.09 | | $1.48 | | $1.92 | |
| Pounds Per Ft | 3.68 | | 5.82 | | 7.62 | | 9.20 | | 10.89 | | 14.81 | | 19.18 | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | +9.25 | +24.5 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 |
| Ambridge, Pa. N2 | +9.25 | .... | +2.75 | .... | +0.25 | .... | 1.25 | .... | 1.25 | .... | 1 | .... | 3.5 | .... |
| Lorain, O. N3 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 |
| Youngstown Y1 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 |

## ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Youngstown R2 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 |

## BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| Size—Inches | ⅛ | | ¼ | | ⅜ | | ½ | | ¾ | | 1 | | 1¼ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 5.5c | | 6c | | 6c | | 8.5c | | 11.5c | | 17c | | 23c | |
| Pounds Per Ft | 0.24 | | 0.42 | | 0.57 | | 0.85 | | 1.13 | | 1.68 | | 2.28 | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | .... | .... | .... | .... | .... | .... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Alton, Ill. L1 | .... | .... | .... | .... | .... | .... | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 |
| Benwood, W. Va. W10 | 4.5 | +22 | +7.5 | +31 | +18 | +39.5 | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Butler, Pa. F6 | 5.5 | +21 | +6.5 | +30 | +17 | +38.5 | .... | .... | .... | .... | .... | .... | .... | .... |
| Etna, Pa. N2 | .... | .... | .... | .... | .... | .... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Fairless, Pa. N3 | .... | .... | .... | .... | .... | .... | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 |
| Fontana, Calif. K1 | .... | .... | .... | .... | .... | .... | +8.25 | +23.5 | +5.25 | +19.5 | +1.75 | +15 | 0.75 | +14.25 |
| Indiana Harbor, Ind. Y1 | .... | .... | .... | .... | .... | .... | 4.25 | +11 | 7.25 | +7 | 10.75 | +2.5 | 13.25 | +3.25 |
| Lorain, O. N3 | .... | .... | .... | .... | .... | .... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Sharon, Pa. S4 | 5.5 | +21 | +6.5 | +30 | +17 | +38.5 | .... | .... | .... | .... | .... | .... | .... | .... |
| Sharon, Pa. M6 | .... | .... | .... | .... | .... | .... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Sparrows Pt., Md. B2 | 3.5 | +23 | 8.5 | +32 | +19 | +40.5 | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 |
| Wheatland, Pa. W9 | 5.5 | +21 | +6 | +30 | +17 | +38.5 | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |
| Youngstown R2, Y1 | .... | .... | .... | .... | .... | .... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 |

| Size—Inches | 1½ | | 2 | | 2½ | | 3 | | 3½ | | 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 27.5c | | 37c | | 58.5c | | 76.5c | | 92c | | $1.09 | |
| Pounds Per Ft | 2.73 | | 3.68 | | 5.82 | | 7.62 | | 9.20 | | 10.89 | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | .... | .... | .... | .... |
| Alton, Ill. L1 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | .... | .... | .... | .... |
| Benwood, W. Va. W10 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Etna, Pa. N2 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Fairless, Pa. N3 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | 4.25 | +12.5 | 4.25 | +12.5 |
| Fontana, Calif. K1 | 1.25 | +13.25 | 1.75 | +12.75 | 3.25 | +13 | 3.25 | +13 | +7.25 | +24 | +7.25 | +24 |
| Indiana Harbor, Ind. Y1 | 13.75 | +0.75 | 14.25 | +0.25 | 15.75 | +0.5 | 15.25 | +0.5 | 5.25 | +11.5 | 5.25 | +11.5 |
| Lorain, O. N3 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | .... | .... | .... | .... |
| Sharon, Pa. M6 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | .... | .... | .... | .... |
| Sparrows Pt., Md. B2 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | 4.25 | +12.5 | 4.25 | +12.5 |
| Wheatland, Pa. W9 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Youngstown R2, Y1 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

# Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

| AISI Type | —Rerolling— Ingot | Slabs | Forging Billets | H.R. Strip | Wire Rods; C.F. Wire | Bars; Structural Shapes | Plates | Sheets | C.R. Strip; Flat Wire |
|---|---|---|---|---|---|---|---|---|---|
| 201 | 22.00 | 27.00 | .... | 36.00 | .... | 42.00 | 44.25 | 48.50 | 45.00 |
| 202 | 23.75 | 30.25 | 36.50 | 39.00 | 40.75 | 43.00 | 45.00 | 49.25 | 49.25 |
| 301 | 23.25 | 28.00 | 37.25 | 37.25 | 42.00 | 44.25 | 46.25 | 51.25 | 47.50 |
| 302 | 25.25 | 31.50 | 38.00 | 40.50 | 42.75 | 45.00 | 47.25 | 52.00 | 52.00 |
| 302B | 25.50 | 32.75 | 40.75 | 45.75 | 45.00 | 47.25 | 49.50 | 57.00 | 57.00 |
| 303 | .... | 32.00 | 41.00 | .... | 45.75 | 48.00 | 50.00 | 56.75 | 56.75 |
| 304 | 27.00 | 33.25 | 40.50 | 44.25 | 45.50 | 47.75 | 50.75 | 55.50 | 55.50 |
| 304L | .... | .... | 48.25 | 51.50 | 53.25 | 55.50 | 58.50 | 63.25 | 63.25 |
| 305 | 28.50 | 36.75 | 42.50 | 47.50 | 45.50 | 47.75 | 51.25 | 58.75 | 58.75 |
| 308 | 30.75 | 38.25 | 47.25 | 50.25 | 52.75 | 55.75 | 60.25 | 63.00 | 63.00 |
| 309 | 39.75 | 49.50 | 57.75 | 64.50 | 63.75 | 67.00 | 71.00 | 80.50 | 80.50 |
| 310 | 49.75 | 61.50 | 78.00 | 84.25 | 86.50 | 91.00 | 92.75 | 96.75 | 96.75 |
| 314 | .... | .... | .... | .... | 86.50 | .... | 92.75 | .... | 104.50 |
| 316 | 39.75 | 49.50 | 62.25 | 69.25 | 69.50 | 73.00 | 76.75 | 81.50 | 81.50 |
| 316L | .... | .... | 70.00 | 76.50 | 77.25 | 80.75 | 84.50 | 89.25 | 89.25 |
| 317 | 48.00 | 60.00 | 76.75 | 88.25 | 86.25 | 90.75 | 93.50 | 101.00 | 101.00 |
| 321 | 32.25 | 40.00 | 47.00 | 53.50 | 52.50 | 55.50 | 59.75 | 65.50 | 65.50 |
| 18-8 CbTa | 37.00 | 46.50 | 55.75 | 63.50 | 61.50 | 64.75 | 69.75 | 79.25 | 79.25 |
| 403 | .... | .... | 32.00 | .... | 36.00 | 37.75 | 40.25 | 48.25 | 48.25 |
| 405 | 19.50 | 25.50 | 29.75 | 36.00 | 33.75 | 35.25 | 37.50 | 46.75 | 46.75 |
| 410 | 16.75 | 21.50 | 28.25 | 31.00 | 32.25 | 33.75 | 35.00 | 40.25 | 40.25 |
| 416 | .... | .... | 28.75 | .... | 32.75 | 34.25 | 36.25 | 48.25 | 48.25 |
| 420 | .... | 33.50 | 34.25 | 41.75 | 39.25 | 41.25 | 45.25 | 62.00 | 62.00 |
| 430 | 17.00 | 21.75 | 28.75 | 32.00 | 32.75 | 34.25 | 36.00 | 40.75 | 40.75 |
| 430F | .... | .... | 29.50 | .... | 33.25 | 34.75 | 36.75 | 51.75 | 51.75 |
| 431 | .... | 28.75 | 37.75 | .... | 42.00 | 44.25 | 46.00 | 56.00 | 56.00 |
| 446 | .... | .... | 39.25 | 59.00 | 44.25 | 46.50 | 47.75 | 70.00 | 70.00 |

**Stainless Steel Producers Are:** Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., H. K. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U.S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Charter Wire Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube Div., U.S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

# Clad Steel

| Stainless | Plates—Carbon Base 5% | 10% | 15% | 20% | Sheets Carbon Base 20% |
|---|---|---|---|---|---|
| 302 | .... | .... | .... | .... | 37.50 |
| 304 | 34.70 | 37.95 | 42.25 | 46.70 | 40.00 |
| 304L | 36.90 | 40.55 | 45.10 | 49.85 | .... |
| 316 | 40.35 | 44.40 | 49.50 | 54.50 | 58.75 |
| 316L | 45.05 | 49.35 | 54.70 | 60.10 | .... |
| 316 Cb | 47.30 | 53.80 | 61.45 | 69.10 | .... |
| 321 | 36.60 | 40.05 | 44.60 | 49.30 | 47.25 |
| 330 | .... | .... | .... | 105.50 | 108.00 |
| 347 | 38.25 | 42.40 | 47.55 | 52.80 | 57.00 |
| 405 | 28.60 | 29.85 | 33.35 | 36.85 | .... |
| 410 | 28.15 | 29.55 | 33.10 | 36.70 | .... |
| 430 | 28.30 | 29.80 | 33.55 | 37.25 | .... |
| Inconel | 48.90 | 59.55 | 70.15 | 80.85 | .... |
| Nickel | 41.65 | 51.95 | 62.30 | 72.70 | .... |
| Nickel, Low Carbon | 41.95 | 52.60 | 63.30 | 74.15 | .... |
| Monel | 43.35 | 53.55 | 63.80 | 74.05 | .... |
| Copper* | .... | .... | .... | .... | 46.00 |

| | Strip, Carbon Base —Cold Rolled— 10% | Both Sides |
|---|---|---|
| Copper* | 33.00 | 39.85 |

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

# Tool Steel

| Grade | $ per lb | Grade | $ per lb |
|---|---|---|---|
| Regular Carbon | 0.290 | Cr Hot Work | 0.45-0.495 |
| Extra Carbon | 0.345 | W-Cr Hot Work | 0.43-0.475 |
| Special Carbon | 0.41-0.45 | V-Cr Hot Work | 0.460 |
| Oil Hardening | 0.450 | Hi-Carbon-Cr | 0.830 |

Grade by Analysis (%)

| W | Cr | V | Co | Mo | | $ per lb |
|---|---|---|---|---|---|---|
| 20.25 | 4.25 | 1.6 | 12.25 | .... | .... | 4.170 |
| 18.25 | 4.25 | 1 | 4.75 | .... | .... | 2.385 |
| 18 | 4 | 2 | 9 | .... | .... | 2.755 |
| 18 | 4 | 2 | .... | .... | .... | 1.845 |
| 18 | 4 | 1 | .... | .... | .... | 1.680 |
| 9 | 3.5 | .. | .... | .... | .... | 1.275 |
| 13.5 | 4 | 3 | .... | .... | .... | 1.945 |
| 13.75 | 3.75 | 2 | 5 | .... | .... | 2.325 |
| 6.4 | 4.5 | 1.9 | .... | 5 | .... | 1.185 |
| 6 | 4 | 3 | .... | 6 | .... | 1.430 |
| 1.5 | 4 | 1 | .... | 8.5 | .... | 1.040 |

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

# Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

| | Basic | No. 2 Foundry | Malle-able | Besse-mer |
|---|---|---|---|---|
| *Birmingham District* | | | | |
| AlabamaCity,Ala. R2 | 62.00 | 62.50 | .... | .... |
| Birmingham R2 | 62.00 | 62.50‡ | .... | .... |
| Birmingham U6 | .... | 62.50‡ | 66.50 | .... |
| Woodward,Ala. W15 | 62.00** | 62.50‡ | 66.50 | .... |
| Cincinnati, deld. | .... | 70.20 | .... | .... |
| *Buffalo District* | | | | |
| Buffalo H1, R2 | 66.00 | 66.50 | 67.00 | 67.50 |
| N.Tonawanda,N.Y. T9 | .... | 66.50 | 67.00 | 67.50 |
| Tonawanda,N.Y. W12 | 66.00 | 66.50 | 67.00 | 67.50 |
| Boston, deld. | 77.29 | 77.79 | 78.29 | .... |
| Rochester,N.Y., deld. | 69.02 | 69.52 | 70.02 | .... |
| Syracuse,N.Y., deld. | 70.12 | 70.62 | 71.12 | .... |
| *Chicago District* | | | | |
| Chicago I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| S.Chicago,Ill. R2 | 66.00 | .... | 66.50 | .... |
| S.Chicago,Ill. W14 | 66.00 | .... | 66.50 | 67.00 |
| Milwaukee, deld. | 68.46 | 68.96 | 68.96 | 69.46 |
| Muskegon,Mich., deld. | .... | 80.33 | 80.33 | .... |
| *Cleveland District* | | | | |
| Cleveland R2, A7 | 66.00 | 66.50 | 66.50 | 67.00 |
| Akron,O., deld. | 69.12 | 69.62 | 69.62 | 70.12 |
| *Mid-Atlantic District* | | | | |
| Birdsboro,Pa. B10 | 68.00 | 68.50 | 69.00 | 69.50 |
| Chester,Pa. P4 | 66.50 | 67.00 | 67.50 | .... |
| Swedeland,Pa. A3 | 68.00 | 68.50 | 69.00 | 69.50 |
| New York, deld. | .... | 74.70 | 75.20 | .... |
| Newark,N.J., deld. | 72.02 | 72.52 | 73.02 | 73.52 |
| Philadelphia, deld. | 69.88 | 70.38 | 70.88 | 71.38 |
| Troy,N.Y. R2 | 68.00 | 68.50 | 69.00 | 69.50 |
| *Pittsburgh District* | | | | |
| NevilleIsland, Pa. P6 | 66.00 | 66.50 | 66.50 | 67.00 |
| Pittsburgh (N&S sides), Aliquippa, deld. | .... | 67.95 | 67.95 | 68.48 |
| McKeesRocks,Pa., deld. | .... | 67.60 | 67.60 | 68.13 |
| Lawrenceville, Homestead, Wilmerding,Monaca,Pa., deld. | .... | 68.26 | 68.26 | 68.79 |
| Verona,Trafford,Pa., deld. | 68.29 | 68.82 | 68.82 | 69.35 |
| Brackenridge,Pa., deld. | 68.60 | 69.10 | 69.10 | 69.63 |
| Midland,Pa. C18 | 66.00 | .... | .... | .... |
| *Youngstown District* | | | | |
| Hubbard, O. Y1 | .... | .... | 66.50 | .... |
| Sharpsville,Pa. S6 | 66.00 | .... | 66.50 | 67.00 |
| Youngstown Y1 | .... | .... | 66.50 | 67.00 |
| Mansfield,O., deld. | 70.90 | .... | 71.40 | 71.90 |
| Duluth I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Erie,Pa. I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Everett, Mass. E1 | 66.50 | 67.00 | 67.50 | .... |
| Fontana,Calif. K1 | 74.00 | 74.50 | .... | .... |
| Geneva,Utah C11 | 66.00 | 66.50 | .... | .... |
| GraniteCity,Ill. G4 | 67.90 | 68.40 | 68.90 | .... |
| Ironton,Utah C11 | 66.00 | 66.50 | .... | .... |
| *Minnequa,Colo. C10* | *68.00* | *68.50* | *69.00* | .... |
| Rockwood,Tenn. T3 | .... | 62.50‡ | 66.50 | .... |
| Toledo,O. I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Cincinnati, deld. | 72.54 | 73.04 | .... | .... |

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

## PIG IRON DIFFERENTIALS

*Silicon:* Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

*Manganese:* Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

*Nickel:* Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

## BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

| | |
|---|---|
| Jackson,O. I-3, J1 | 77.25 |
| Buffalo H1 | 78.50 |

## ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

| | |
|---|---|
| CalvertCity,Ky. P15 | $99.00 |
| NiagaraFalls,N.Y. P15 | 99.00 |
| Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2 | 103.50 |
| Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2 | 106.50 |

## LOW PHOSPHORUS PIG IRON, Gross Ton

| | |
|---|---|
| Lyles,Tenn. T3 (Phos. 0.035% max) | $78.50 |
| Troy,N.Y. R2 (Phos. 0.035% max) | 74.00 |
| Philadelphia, deld. | 81.76 |
| Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |

# Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Houston, Seattle no charge.

| | SHEETS | | | | STRIP | BARS | | | Standard Structural Shapes | PLATES | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hot-Rolled | Cold-Rolled | Gal. 10 Ga.† | Stainless Type 302 | Hot-Rolled* | H.R. Rounds | C.F. Rds.‡ | H.R. Alloy 4140††§ | | Carbon | Floor |
| Atlanta | 8.59§ | 9.86§ | 10.13§ | .... | 8.64 | 9.01 | 10.68 | .... | 9.05 | 8.97 | 10.90 |
| Baltimore | 8.28 | 8.98 | 9.76 | .... | 8.76 | 9.06 | 9.13[3] | 15.18 | 9.19 | 8.66 | 10.14 |
| Birmingham | 7.80 | 9.00 | 9.52 | .... | 7.82 | 8.07 | 10.12 | .... | 8.20 | 8.16 | 10.31 |
| Boston | 9.31 | 10.40 | 11.41 | .... | 9.35 | 9.68 | .... | 15.24 | 9.59 | 9.65 | 11.13 |
| Buffalo | 8.25 | 9.45 | 11.07 | .... | 8.50 | 8.80 | .... | 15.00 | 8.90 | 8.90 | 10.45 |
| Chattanooga | 7.99 | 9.24 | 9.10 | .... | 8.00 | 8.24 | 10.04 | .... | 8.44 | 8.40 | 10.26 |
| Chicago | 8.20 | 9.45 | 10.00 | .... | 8.23 | 8.60 | 8.80 | 14.65 | 8.64 | 8.56 | 9.88 |
| Cincinnati | 8.34 | 9.48 | 10.05 | .... | 8.54 | 8.92 | 9.31 | 14.96 | 9.18 | 8.93 | 10.21 |
| Cleveland | 8.18 | 9.45 | 9.95 | .... | 8.33 | 8.69 | .... | 14.74 | 9.01 | 8.79 | 10.11 |
| Denver | 9.38 | 11.75 | .... | .... | 9.41 | 9.78 | 11.10 | .... | 9.82 | 9.74 | 11.06 |
| Detroit | 8.43 | 9.70 | 10.35 | .... | 8.58 | 8.90 | 9.15 | 14.91 | 9.18 | 8.91 | 10.13 |
| Erie, Pa. | 8.20 | 9.45 | 9.95[10] | .... | 8.50 | 8.75 | 9.05[10] | .... | 9.00 | 8.85 | 10.10 |
| Houston | 8.80 | 9.75 | 10.99 | .... | 7.75 | 8.05 | 10.65 | 15.00 | 8.00 | 8.80 | 10.30 |
| Jackson, Miss. | 8.09 | 9.34 | 9.79 | .... | 8.16 | 8.41 | 10.23 | .... | 8.54 | 8.50 | 10.34 |
| Los Angeles | 9.50 | 10.75 | 11.65 | .... | 9.55 | 9.55 | 12.75 | 16.00 | 9.60 | 9.55 | 11.70 |
| Milwaukee | 8.33 | 9.58 | 10.13 | .... | 8.36 | 8.73 | 9.03 | 14.78 | 8.85 | 8.69 | 10.01 |
| Moline, Ill. | 8.13 | 9.35 | 10.05 | .... | 8.17 | 8.42 | 8.70 | .... | 8.55 | 8.51 | ... |
| New York | 8.87 | 10.13 | 10.56 | .... | 9.31 | 9.57 | .... | 15.09 | 9.35 | 9.43 | 10.71 |
| Norfolk, Va. | 8.05 | .... | .... | .... | 8.55 | 8.60 | 10.80 | .... | 8.95 | 8.45 | 9.95 |
| Philadelphia | 8.00 | 8.90 | 10.24 | 51.94 | 8.67 | 8.65 | 9.76 | 15.01 | 8.50 | 8.77 | 9.77** |
| Pittsburgh | 8.18 | 9.45 | 10.35 | 50.00 | 8.33 | 8.60 | 9.05 | 14.65 | 8.64 | 8.56 | 9.88 |
| Portland, Oreg. | 9.50 | 11.20 | 11.55 | 57.20 | 11.35‡‡ | 9.65 | 14.50 | 15.95 | 9.65 | 9.30 | 12.50 |
| Richmond, Va. | 8.00 | .... | 10.14 | .... | 8.55 | 8.40 | 10.00 | .... | 8.95 | 8.40 | 9.90 |
| St. Louis | 8.54 | 9.79 | 10.36 | .... | 8.59 | 8.97 | 9.41 | 15.01 | 9.10 | 8.93 | 10.25 |
| St. Paul | 8.39 | 9.59 | 10.26 | .... | 8.43 | 8.68 | 9.21 | .... | 8.94 | 8.90 | 10.10 |
| San Francisco | 9.35 | 10.75 | 10.85 | 54.85 | 9.45 | 9.70 | 13.00 | 16.10 | 9.50 | 9.60 | 12.00 |
| Seattle | 9.95 | 11.15 | 12.00 | 57.20 | 10.00 | 10.10 | 14.05 | 16.35 | 9.80 | 9.70 | 12.10 |
| Spokane, Wash. | 9.95 | 11.15 | 12.00 | .... | 10.00 | 10.10 | 14.05 | 17.10 | 9.80 | 9.70 | 12.10 |
| Washington | 8.48 | 9.58 | .... | .... | 9.06 | 9.15 | 9.73 | .... | 9.35 | 8.86 | 10.36 |

*Prices do not include gage extras; †prices include gage and coating extras, except in Birmingham (coating extra excluded); ‡includes 35-cent bar quality extras; §42 in. and under; **⅜-in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [8]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

# Refractories

**Fire Clay Brick (per 1000)**

*High-Heat Duty:* Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, O., $138; Cutler, Utah, $165.

*Super-Duty:* Ironton, O., Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

**Silica Brick (per 1000)**

*Standard:* Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., $150; Warren, Niles, Windham, O., Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

*Super-Duty:* Sproul, Hawstone, Pa., Niles, Warren, Windham, O., Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

**Semisilica Brick (per 1000)**

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N.J., $135.

**Ladle Brick (per 1000)**

*Dry Pressed:* Aisey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, O., $96.75; Clearfield, Pa., Portsmouth, O., $102.

**High-Alumina Brick (per 1000)**

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Philadelphia, Clearfield, Orviston, Pa., $305.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Philadelphia, Clearfield, Orviston, Pa., $345.

**Sleeves (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

**Nozzles (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

**Runners (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., $234.

**Dolomite (per net ton)**

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, O., $16; Thornton, McCook, Ill., $16.35; Dolly Siding, Bonne Terre, Mo., $15.

**Magnesite (per net ton)**

Domestic, dead-burned, bulk ½-in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜-in. grains with fines: Baltimore, $73.

# Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective $CaF_2$ content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry duty paid, metallurgical grade: European, $33-$34; Mexican, all-rail, duty paid, $25.25-$25.75; barge, Brownsville, Tex., $27.25-$27.75.

# Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

| | Cents |
|---|---|
| Sponge Iron, Swedish: Deld. east of Mississippi river, ocean bags 23,000 lb and over | 10.50 |
| F.o.b. Riverton or Camden, N.J., west of Mississippi river | 9.50 |
| Sponge Iron, domestic, 98 + % Fe: Deld. east of Mississippi river, 23,000 lb and over | 10.50 |
| F.o.b. Riverton, N.J., west of Mississippi river | 9.50 |
| Sponge Iron, Canadian: F.o.b. shipping point | 9.50 |
| Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in. | 28.00 |
| Annealed, 99.5% Fe | 36.50 |
| Unannealed (99+ % Fe) | 36.00 |
| Unannealed (99+ % Fe) (minus 325 mesh) | 59.00 |
| Powder Flakes (minus 16, plus 100 mesh) | 29.00 |
| Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh. | |

| | Cents |
|---|---|
| Aluminum: Atomized, 500 lb drum, fr'ght allowed | |
| Carlots | 38.20 |
| Ton lots | 40.20 |
| Antimony, 500 lb lots | 32.00* |
| Brass, 5000-lb lots | 32.60-39.40† |
| Bronze, 5000-lb lots | 50.20-54.70† |
| Copper: Electrolytic | 14.25* |
| Reduced | 14.25* |
| Lead | 7.50* |
| Manganese: Minus 35 mesh | 64.00 |
| Minus 100 mesh | 70.00 |
| Minus 200 mesh | 75.00 |
| Nickel, unannealed | $1.15 |
| Nickel-Silver, 5000-lb lots | 50.80-55.40† |
| Phosphor-Copper, 5000-lb lots | 62.00 |
| Copper (atomized) 5000-lb lots | 44.50-52.00‡ |
| Silicon | 47.50 |
| Solder | 7.00* |
| Stainless Steel, 304 | $1.08 |
| Stainless Steel, 316 | $1.44 |
| Tin | 14.50* |
| Zinc, 5000-lb lots | 18.00-31.20‡ |
| Tungsten: Melting grade, 99% 60 to 2000 mesh: | Dollars |
| 1000 lb and over | 3.75 |
| Less than 1000 lb | 3.90 |
| Chromium, electrolytic 99.8% Cr min metallic basis | 5.00 |

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

# Electrodes

Threaded with nipple; unboxed, f.o.b. plant

**GRAPHITE**

| Inches Diam. | Inches Length | Per 100 lb |
|---|---|---|
| 2 | 24 | $57.75 |
| 2½ | 30 | 37.25 |
| 3 | 40 | 35.25 |
| 4 | 40 | 33.25 |
| 5½ | 40 | 33.00 |
| 6 | 60 | 30.00 |
| 7 | 60 | 26.75 |
| 8, 9, 10 | 60 | 26.50 |
| 12 | 72 | 25.50 |
| 14 | 60 | 25.50 |
| 16 | 72 | 24.50 |
| 17 | 60 | 25.50 |
| 18 | 72 | 24.50 |
| 20 | 72 | 24.00 |
| 24 | 84 | 24.75 |

**CARBON**

| | | |
|---|---|---|
| 8 | 60 | 13.30 |
| 10 | 60 | 13.00 |
| 12 | 60 | 12.95 |
| 14 | 60 | 12.85 |
| 14 | 72 | 11.95 |
| 17 | 60 | 11.85 |
| 17 | 72 | 11.40 |
| 20 | 84 | 11.40 |
| 20 | 90 | 11.00 |
| 24 | 72, 84 | 11.25 |
| 24 | 96 | 10.95 |
| 30 | 84 | 11.05 |
| 40, 35 | 110 | 10.70 |
| 40 | 100 | 10.70 |

# Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

| | North Atlantic | South Atlantic | Gulf Coast | West Coast |
|---|---|---|---|---|
| Deformed Bars, Intermediate, ASTM-A 305 | $6.58 | $6.53 | $6.53 | $6.76 |
| Bar Size Angles | 6.62 | 6.57 | 6.57 | 6.75 |
| Structural Angles | 6.62 | 6.57 | 6.57 | 6.75 |
| I-Beams | 6.87 | 6.82 | 6.82 | 7.00 |
| Channels | 6.87 | 6.82 | 6.82 | 7.00 |
| Plates (basic bessemer) | 8.50 | 8.45 | 8.45 | 8.75 |
| Sheets, H.R. | 8.50 | 8.45 | 8.45 | 8.75 |
| Sheets, C.R. (drawing quality) | 9.00 | 8.95 | 8.95 | 9.25 |
| Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft | 26.79 | 26.67 | 26.67 | 27.36 |
| Barbed Wire (†) | 6.95 | 6.95 | 6.95 | 7.40 |
| Merchant Bars | 6.87 | 6.82 | 6.82 | 7.22 |
| Hot-Rolled Bands | 7.20 | 7.15 | 7.15 | 7.55 |
| Wire Rods, Thomas Commercial No. 5 | 6.73 | 6.73 | 6.73 | 7.13 |
| Wire Rods, O.H. Cold Heading Quality No. 5 | 7.07 | 7.07 | 7.07 | 7.47 |
| Bright Common Wire Nails (§) | 8.38 | 8.38 | 8.38 | 8.58 |

†Per 82-lb. net, reel. §Per 100-lb kegs, 20d nails and heavier.

# Ores

**Lake Superior Iron Ore**

(Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

| | |
|---|---|
| Mesabi bessemer | $11.60 |
| Mesabi nonbessemer | 11.45 |
| Old range bessemer | 11.85 |
| Old range nonbessemer | 11.70 |
| Open-hearth lump | 12.70 |
| High phos. | 11.45 |

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

**Eastern Local Iron Ore**

Cents per unit, deld. E. Pa.

| | |
|---|---|
| New Jersey, foundry and basic 62-64% concentrates | 25.00-27.00 |

**Foreign Iron Ore**

Cents per unit, c.i.f. Atlantic ports

| | |
|---|---|
| Swedish basic, 65% | 27.00-27.50 |
| N. African hematite (spot) | nom. |
| Brazilian iron ore, 68-69% | 32.00-33.00 |

**Tungsten Ore**

Net ton unit, before duty

| | |
|---|---|
| Foreign wolframite, good commercial quality | 20.00-23.00 |
| Domestic, concentrates mine | 55.00 |

**Manganese Ore**

Mn 46-48%, Indian (export tax included), $1.60-1.70 per long ton unit, c.i.f. U.S. ports, duty for buyer's account: other than Indian, $1.45-1.50; contracts by negotiation.

**Chrome Ore**

Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

| | |
|---|---|
| *Indian and Rhodesian* | |
| 48% 3:1 | $55.00-58.00 |
| 48% 2.8:1 | 52.00-55.00 |
| 48% no ratio | 46.00-48.00 |
| *South African Transvaal* | |
| 48% no ratio | $40.00-41.00 |
| 44% no ratio | 30.00-31.00 |
| *Turkish* | |
| 48% 3:1 | $59.00-62.00 |
| *Domestic* Rail nearest seller | |
| 18% 3:1 | $39.00 |

**Molybdenum**

| | |
|---|---|
| Sulphide concentrate, per lb of Mo content, mines, unpacked | $1.18 |

**Antimony Ore**

Per short ton unit of Sb content, c.i.f. seaboard

| | |
|---|---|
| 55-60% | $3.10-3.60 |
| 60-65% | 3.60-3.80 |

**Vanadium Ore**

Cents per lb $V_2O_5$

| | |
|---|---|
| Domestic | 31.00 |

# Metallurgical Coke

Price per net ton

| | |
|---|---|
| **Beehive Ovens** | |
| Connellsville, furnace | $14.75-15.75 |
| Connellsville, foundry | 18.00-18.50 |
| **Oven Foundry Coke** | |
| Birmingham, ovens | $28.85 |
| Cincinnati, deld. | 33.78 |
| Buffalo, ovens | 30.50 |
| Camden, N. J., ovens | 29.50 |
| Detroit, ovens | 30.50 |
| Pontiac, deld. | 32.25 |
| Saginaw, deld. | 33.83 |
| Erie, Pa., ovens | 30.50 |
| Everett, Mass., ovens | |
| New England, deld. | 31.55* |
| Indianapolis, ovens | 29.75 |
| Ironton, O., ovens | 29.00 |
| Cincinnati, deld | 31.84 |
| Kearny, N.J., ovens | 29.75 |
| Milwaukee, ovens | 30.50 |
| Painesville,O., ovens | 30.50 |
| Cleveland, deld. | 32.69 |
| Philadelphia, ovens | 29.50 |
| St. Louis, ovens | 31.50 |
| Neville Island (Pittsburgh), Pa., ovens | 29.25 |
| St. Paul, ovens | 29.75 |
| Chicago, deld. | 33.24 |
| Swedeland, Pa., ovens | 29.50 |
| Terre Haute, Ind., ovens | 29.75 |

*Or within $4.80 freight zone from works.

# Coal Chemicals

Spot, cents per gallon, ovens

| | |
|---|---|
| Pure benzene | 36.00 |
| Toluene, one deg. | 32.00-34.00 |
| Industrial xylene | 32.00-35.00 |
| Per ton, bulk, ovens | |
| Ammonium sulfate | $32.00 |

Cents per pound, producing point

Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.

# Ferroalloys

## MANGANESE ALLOYS

**Spiegeleisen:** Carlot, per gross ton, Palmerton, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

**Standard Ferromanganese:** (Mn 74-76%, C 7% approx). Base price per net ton; $255, Johnstown, Duquesne, Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively.

(Mn 79-81%). Lump $263 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

**High-Grade Low-Carbon Ferromanganese:** (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

**Medium-Carbon Ferromanganese:** (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

**Manganese Metal:** 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

**Electrolytic Manganese Metal:** Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

**Silicomanganese:** (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, SI 15-17%, deduct 0.2c from above prices. For 3% C grade SI 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

## TITANIUM ALLOYS

**Ferrotitanium, Low-Carbon:** (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

**Ferrotitanium, High-Carbon:** (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

**Ferrotitanium, Medium-Carbon:** (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

## CHROMIUM ALLOYS

**High-Carbon Ferrochrome:** Contract, c.l. lump, bulk, 27.75c per lb of contained Cr; c.l. packed 29.3c, ton lot 31.05c; less ton 32.45c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome:** (Cr 67-71%). Contract, carload, lump, bulk, C 0.025% max (Simplex) 34.75c per lb contained Cr, 0.02% max 41.5c, 0.03% max 41c, 0.06% max 39.5c, 0.1% max 39c, 0.15% max 38.75c, 0.2% max 38.5c, 0.5% max 38.25c, 1.0% max 37.5c, 1.5% max 37.35c, 2.0% max 37.25c. Ton lot, add 3.4c, less ton add 5.1c. Carload packed add 1.75c. Delivered. Spot, add 0.25c.

**Foundry Ferrochrome, High-Carbon:** (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 29.05c per lb of contained Cr. Packed, c.l. 30.65c, ton 32.45c, less ton 33.95c. Delivered. Spot, add 0.25c.

**Foundry Ferrosilicon Chrome:** (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 20.85c, per lb of alloy, ton lot 22.10c; less ton lots 23.3c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome-Silicon:** (Cr 39-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 41.35c per lb of contained Cr; 1" x down, bulk, 42.35c. Delivered.

**Chromium Metal, Electrolytic:** Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

## VANADIUM ALLOYS

**Ferrovanadium:** Open-hearth Grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

**Grainal:** Vanadium Grainal No. 1 $1.05 per lb. No. 6, 68c; No. 79, 50c, freight allowed.

**Vanadium Oxide:** Contract, less carload lot, packed, $1.38 per lb contained $V_2O_5$, freight allowed. Spot, add 5c.

## SILICON ALLOYS

**25-30% Ferrosilicon:** Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

**50% Ferrosilicon:** Contract, carload, lump, bulk, 13c per lb of contained Si. Packed c.l. 15.5c, ton lot 16.95c, less ton 18.6c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

**Low-Aluminum 50% Ferrosilicon:** (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

**65% Ferrosilicon:** Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

**75% Ferrosilicon:** Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

**90% Ferrosilicon:** Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

**Silicon Metal:** (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 20.00c per lb of Si. Packed, c.l. 21.65c, ton lot 22.95c, less ton 23.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

**Alsifer:** (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

## ZIRCONIUM ALLOYS

**12-15% Zirconium Alloy:** (Zr 12-15%, SI 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

**35-40% Zirconium Alloy:** (Zr 35-40%, SI 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

## BORON ALLOYS

**Ferroboron:** (B 17.50% min, SI 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

**Borosil:** (3 to 4% B, 40 to 45% SI). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

**Bortam:** (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

**Carbortam:** (1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

## CALCIUM ALLOYS

**Calcium-Manganese-Silicon:** (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

**Calcium-Silicon:** (Ca 30-33%, SI 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

## BRIQUETTED ALLOYS

**Chromium Briquets:** (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19c per lb of briquet, carload packed in box pallets 19.2c, in bags 20.1c; 3000 lb to c.l. in box pallets 20.4c; 2000 lb to c.l. in bags, 21.3; less than 2000 lb in bags 22.2c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Ferromanganese Briquets:** (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l. bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicomanganese Briquets:** (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicon Briquets:** (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l. bags 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

**Molybdic-Oxide Briquets:** (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

## TUNGSTEN ALLOYS

**Ferrotungsten:** (70-80%). 5000 lb W or more $2.95 per lb of contained W; 2000 lb W to 5000 lb W, $3.05; less than 2000 lb W, $3.17. Delivered.

## OTHER FERROALLOYS

**Ferrocolumbium:** (Cb 50-60%, SI 8% max, C 0.4% max). Contract, ton lot 2" x D, $4.90 per lb of contained Cb. Delivered. Spot, add 10c.

**Ferrotantalum—Columbium:** (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $4.25 per lb of contained Cb plus Ta, delivered; less ton lot $4.30.

**SMZ Alloy:** (SI 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 19c per lb of alloy, ton lot 20.15c, less ton 21.4c. Delivered. Spot, add 0.25c.

**Graphidox No. 5:** (SI 48-52%, Ca 5.7%, TI 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**V-5 Foundry Alloy:** (Cr 38-42%, SI 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

**Simanal:** (Approx 20% each SI, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

**Ferrophosphorus:** (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

**Ferromolybdenum:** (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.68 in all sizes except powdered which is $1.74.

**Technical Molybdic-Oxide:** Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

# the RIGHT SIZE and SHAPE...

## in welded steel tubing

What size do you need? Standard produces welded tubing in a vast range of sizes and grades—stainless, carbon and low alloy. What shape do you need? Standard produces it in round, square, rectangulars, and a host of special shapes. Maybe you have a design problem? The specialists at Standard are anxious to work with you. Whether your requirements call for structural, mechanical, or pressure tubing, Standard produces them to your specifications.




**FREE**

Write for 8-page folder on all Standard products.

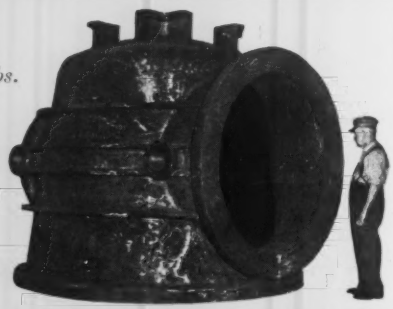
# STANDARD

**THE STANDARD TUBE COMPANY**

**24400 PLYMOUTH ROAD • DETROIT 39, MICHIGAN**

*Welded stainless tubing and pipe • Welded carbon steel mechanical • Boiler and heat exchanger • Exclusive rigidized patterns • Special shapes • Steel Tubing—Sizes ½" OD to 5½" OD—.028 to .260 wall • Stainless Pipe—Schedule 40: ⅛" to 2" I.P.S.; Schedules 5 and 10: ⅛" to 4" I.P.S.—Stainless Tube—¼" to 4¾" OD —.025 to .165 wall in square, rectangular, and special shapes of equivalent sizes.*

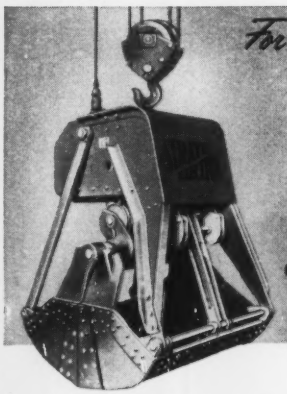
*Weight—*
*29,500 lbs.*



**PRECISION**
GRAY IRON • ALLOY IRON • DUCTILE IRON
**CASTINGS**
CEMENT BONDED SAND METHOD
**CHAMBERSBURG**
**ENGINEERING COMPANY**

*Phone Casting Sales Dept.*

563 Derbyshire Street — Chambersburg, Penna.



*For big payloads fast!*
**STRAYER ELECTRIC**
SINGLE-LINE
HOOK-ON BUCKETS
HOOK ON AND PLUG IN
ON AND OFF IN 5 MINUTES
OPERATE IN
THEIR OWN HEADROOM

7 Good Reasons Why Strayer Electrics Deliver

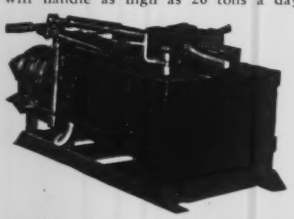
GREAT CLOSING POWER: Strayer Electric motor driven, combination block and tackle and lever arm action.
DUMPS FULL PAYLOADS: No stiffening plates or braces to collect material.
LONGER CABLE LIFE: Full wrap reeving. No backlash.
NO SIFT-OUT: Positive scoop alignment.
POSITIVE CONTROL: Dig or Dump as much as you like.
COMPLETELY SAFE: Fool-proof power brake.
FAST PARTS SERVICE: Power unit made of standard catalog parts. Quick delivery.

AC—DC MODELS
Send for Catalog. Write Dept. ST-87

**ERIE STRAYER CO.**
1487 Geist Road — Erie, Pennsylvania

**KARDONG CIRCLE BENDER**
For Concrete Reinforcing Bars

This is a powerful and fast machine for heavy duty work in both fabricating plants or in the field where large tonnage is required. It will handle as high as 20 tons a day. Circles of any size required in concrete reinforcing work from 18 inches in diameter up can be bent on this machine. It will bend bars with two or more radii on the same bar without stopping the machine.



*Made in two sizes*
Model "C" Capacity 1¼ inch
Model "CA" Capacity 1 inch

Write for catalog of our complete line of reinforcing bar benders.

**KARDONG BROTHERS, INC.**
MINNEAPOLIS 13, MINN.

**HOT DIP GALVANIZING**
**JOSEPH P. CATTIE & BROTHERS, INC.**
2520 East Hagert Street
Phone: Re-9-8911 — Philadelphia 25, Pa.

**IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .**

**STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.**

# Scrap Prices Making a Turnabout

**STEEL's composite on the prime steelmaking grade rises 50 cents (to $54.50) after declining steadily since the end of June. Market undertone firm, though buying lags**

Scrap Prices, Page 158

**Pittsburgh**—Despite the absence of major mill purchases of the leading grades, there's a feeling of strength in the scrap market. This arises from expectation of increases in mill operations in late third quarter, a continued shortage of good quality scrap and strength in the quotations for No. 1 factory bundles. Industrial lists which closed late in July showed an advance of $2 in prices on factory bundles. The strength generally gave a firmer tone to the market. Cut structurals and heavy turnings edged upwards $1.

**Chicago**—Growing strength in scrap continues to push prices up despite negligible consumer purchases. All leading grades are carrying higher quotations in the market than were being quoted a week ago. Brokers have upped their offers to dealers. Dealers show no interest in contracting for large tonnages in the belief that the price trend will continue up.

While less industry scrap was generated in July because of vacation closings, that is not the influence pushing the market higher. The chief prod is the universal optimism for steelmaking operations in the fourth quarter.

The cast iron grades are stronger, with some foundries attempting unsuccessfully to buy tonnage now for delivery at a later date.

**Philadelphia** — Domestic scrap buying is light, with prices moving within a narrow range. Considerable local open-hearth material is still moving for export at higher than domestic quotations.

No. 1 heavy melting is off about 50 cents to $53, delivered, while No. 2 heavy meltnig is up 50 cents to $47, also No. 1 bundles and No. 1 busheling to $54. No. 2 bundles are a shade stronger at $44.50, delivered, and electric furnace bundles at $56-$57. Heavy turnings are lower at $49, delivered, and so are structurals and plate at $58-$59.

Mixed borings and turnings, short shoveling turnings and machine shop turnings are unchanged and larely nominal. Railroad specialties are steady. No. 1 cupola cast is off $1 to $47 on buying by a large pipe mill. Other cast iron grades are unchanged with malleable nominal.

**New York**—Scrap demand is light, with brokers reducing their buying prices on No. 2 bundles to $39-$40, on low phos structurals and plates to $53-$54. Brokers have lowered their buying prices on 18-8 stainless sheets, clips and solids to $280-$285, on 18-8 borings and turnings to $170-$180. Other grades are soft but unchanged.

**Cleveland**—Although active mill and foundry demand for scrap is lacking, the market undertone appears stronger. Largely, this is attributable to strength in bids for No. 1 factory bundles, which went up $3 to $4 at last month's close. For the most part, prices on the steelmaking grades are up about $1 a ton, but they are mostly nominal pending a buying test.

**Buffalo**—Scrap prices reflect a steady market undertone, despite the lack of mill buying. A small consumer bought a limited tonnage of No. 1 heavy melting at $2 above the recognized market, but the sale was not large enough to establish a new market level.

A test for the Buffalo area may come early this month when the leading local consumer re-enters the market. This mill was out of the market throughout July.

Dealers' accumulations last month were relatively light. There is no distress scrap overhanging the market.

Some foundries are buying limited tonnages of specialties.

**Detroit**—A scramble for small tonnage pushed up scrap prices in this area last week. No. 1 grades moved up following the advance the week earlier on the No. 2 grades. Turnings still hold on a low level. Machining operations are off. Increased die programs for the auto industry have sparked an advance in the foundry grades of scrap. More rises are expected.

**Cincinnati**—After a lull of several weeks, the scrap market here has developed a strong undertone; principal steelmaking grades moved up $1 a ton in brokers' buying prices. Area mills are expected to enter the market this week with brokers of the opinion that the bottom has been reached in steel production. No. 1 heavy melting is quoted $52-$53, brokers' buying price.

**St. Louis**—Railroad scrap has moved up $1 to $6 a ton under impetus of strong demand and

(*Please turn to page* 163)

# Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, July 31, 1957. *Changes shown in italics.*

## STEELMAKING SCRAP COMPOSITE

| | |
|---|---|
| July 31 | $54.50 |
| July 24 | 54.00 |
| July 1952 | 42.60 |
| June Avg. | 54.89 |
| July 1956 | 47.70 |

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

### PITTSBURGH

| | |
|---|---|
| *No. 1 heavy melting* | *56.00-57.00* |
| No. 2 heavy melting | 49.00-50.00 |
| *No. 1 factory bundles* | *64.00-65.00* |
| No. 1 dealer bundles | 56.00-57.00 |
| *No. 2 bundles* | *47.00-48.00* |
| No. 1 busheling | 56.00-57.00 |
| Machine shop turnings | 33.00-34.00 |
| Mixed borings, turnings | 33.00-34.00 |
| Short shovel turnings | 37.00-38.00 |
| Cast iron borings | 37.00-38.00 |
| *Cut Structurals:* | |
| *2 ft and under* | *64.00-65.00* |
| *3 ft lengths* | *63.00-64.00* |
| *Heavy turnings* | *50.00-51.00* |
| *Punchings & plate scrap* | *63.00-64.00* |
| *Electric furnace bundles* | *63.00-64.00* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 49.00-50.00 |
| Heavy breakable cast | 47.00-48.00 |
| Unstripped motor blocks | 36.00-37.00 |
| No. 1 machinery cast | 59.00-60.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 64.00-65.00 |
| Rails, 2 ft and under | 75.00-76.00 |
| Rails, 18 in. and under | 76.00-77.00 |
| Rails, random lengths | 73.00-74.00 |
| Railroad specialties | 73.00-74.00 |

Stainless Steel Scrap

| | |
|---|---|
| 18-8 bundles & solids | 300.00-315.00 |
| 18-8 turnings | 190.00-215.00 |
| 430 bundles & solids | 80.00-85.00 |
| 430 turnings | 55.00-60.00 |

### CLEVELAND

| | |
|---|---|
| *No. 1 heavy melting* | *52.00-53.00* |
| No. 2 heavy melting | 46.00-47.00 |
| *No. 1 factory bundles* | *57.00-58.00* |
| *No. 1 bundles* | *52.00-53.00* |
| No. 2 bundles | 43.00-44.00 |
| *No. 1 busheling* | *52.00-53.00* |
| *Machine shop turnings* | *23.00-24.00* |
| *Short shovel turnings* | *27.00-28.00* |
| *Mixed borings, turnings* | *27.00-28.00* |
| *Cast iron borings* | *27.00-28.00* |
| Cut foundry steel | 55.00-56.00 |
| *Cut structurals, plates 2 ft and under* | *63.00-64.00* |
| *Low phos. punchings & plate* | *55.00-56.00* |
| *Alloy free, short shovel turnings* | *30.00-31.00* |
| *Electric furnace bundles* | *56.00-57.00* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 53.00-54.00 |
| Charging box cast | 43.00-44.00 |
| Heavy breakable cast | 41.00-42.00 |
| Stove plate | 50.00-51.00 |
| Unstripped motor blocks | 37.00-38.00 |
| Brake shoes | 41.00-42.00 |
| Clean auto cast | 54.00-55.00 |
| Burnt cast | 39.00-40.00 |
| Drop broken machinery | 56.00-57.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 57.00-58.00 |
| R.R. malleable | 61.00-62.00 |
| Rails, 2 ft and under | 75.00-76.00 |
| Rails, 18 in. and under | 76.00-77.00 |
| Rails, random lengths | 68.00-69.00 |
| Cast steel | 63.00-64.00 |
| Railroad specialties | 65.00-66.00 |
| Uncut tires | 63.00-64.00 |
| Angles, splice bars | 67.00-68.00 |
| Rails, rerolling | 73.00-74.00 |

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| *18-8 bundles, solids* | *300.00-305.00* |
| *18-8 turnings* | *200.00-205.00* |
| 430 clips, bundles, solids | 75.00-80.00 |
| 430 turnings | 40.00-50.00 |

### YOUNGSTOWN

| | |
|---|---|
| *No. 1 heavy melting* | *55.00-56.00* |
| *No. 2 heavy melting* | *48.00-49.00* |
| *No. 1 bundles* | *55.00-56.00* |
| *No. 2 bundles* | *45.00-46.00* |
| *No. 1 busheling* | *55.00-56.00* |
| *Machine shop turnings* | *23.00-24.00* |
| *Short shovel turnings* | *29.00-30.00* |
| *Cast iron borings* | *29.00-30.00* |
| *Low phos.* | *60.00-61.00* |
| *Electric furnace bundles* | *60.00-61.00* |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 63.00-64.00 |

### CHICAGO

| | |
|---|---|
| *No. 1 heavy melt., indus.* | *55.00-56.00* |
| *No. 1 hvy melt., dealer* | *52.00-53.00* |
| *No. 2 heavy melting* | *46.00-47.00* |
| *No. 1 factory bundles* | *59.00-60.00* |
| No. 1 dealer bundles | 53.00-54.00 |
| *No. 2 bundles* | *39.00-40.00* |
| *No. 1 busheling, indus.* | *55.00-56.00* |
| *No. 1 busheling, dealer* | *52.00-53.00* |
| *Machine shop turnings* | *34.00-35.00* |
| *Mixed borings, turnings* | *36.00-37.00* |
| *Short shovel turnings* | *36.00-37.00* |
| *Cast iron borings* | *36.00-37.00* |
| Cut structurals, 3 ft | 58.00-59.00 |
| Punchings & plate scrap | 59.00-60.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 47.00-48.00 |
| Stove plate | 45.00-46.00 |
| Unstripped motor blocks | 35.00-36.00 |
| Clean auto cast | 53.00-54.00 |
| Drop broken machinery | 53.00-54.00 |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *59.00-60.00* |
| R.R. malleable | 62.00-63.00 |
| Rails, 2 ft and under | 79.00-80.00 |
| Rails, 18 in. and under | 80.00-81.00 |
| *Angles, splice bars* | *69.00-70.00* |
| Rails, rerolling | 79.00-80.00 |

Stainless Steel Scrap

| | |
|---|---|
| 18-8 bundles & solids | 315.00-325.00 |
| 18-8 turnings | 215.00-225.00 |
| *430 bundles & solids* | *90.00-95.00* |
| *430 turnings* | *62.50-67.50* |

### DETROIT

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| *No. 1 heavy melting* | *50.00-51.00* |
| No. 2 heavy melting | 42.00 |
| *No. 1 bundles* | *50.00-51.00* |
| No. 2 bundles | 41.00 |
| *No. 1 busheling* | *50.00-51.00* |
| Machine shop turnings | 27.00-28.00 |
| Mixed borings, turnings | 28.00-29.00 |
| Short shovel turnings | 29.00-30.00 |
| *Punchings & plate scrap* | *60.00-61.00* |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *51.00* |
| Charging box cast | 41.00 |
| *Stove plate* | *44.00* |
| *Heavy breakable* | *39.00* |
| Unstripped motor blocks | 28.00 |
| *Clean auto cast* | *52.00* |
| *Malleable* | *53.00* |

### ST. LOUIS

(Brokers' buying prices)

| | |
|---|---|
| *No. 1 heavy melting* | *46.00* |
| No. 2 heavy melting | 43.00 |
| *No. 1 bundles* | *48.00* |
| No. 2 bundles | 38.00 |
| *No. 1 busheling* | *46.00* |
| Machine shop turnings | 30.00 |
| Short shovel turnings | 32.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 48.00 |
| *Charging box cast* | *42.00* |
| *Heavy breakable cast* | *42.00* |
| Unstripped motor blocks | 40.00 |
| Brake shoes | 40.00 |
| Clean auto cast | 48.00 |
| Stove plate | 43.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 57.00 |
| *Rails, 18 in. and under* | *75.00* |
| *Rails, random lengths* | *68.00* |
| *Rails, rerolling* | *78.00* |
| *Angles, splice bars* | *63.00* |

### PHILADELPHIA

| | |
|---|---|
| *No. 1 heavy melting* | *53.00* |
| *No. 2 heavy melting* | *47.00* |
| *No. 1 bundles* | *54.00* |
| *No. 2 bundles* | *44.50* |
| *No. 1 busheling* | *54.00* |
| *Electric furnace bundles* | *56.00-57.00* |
| Mixed borings, turnings | 37.00 |
| Short shovel turnings | 38.00-39.00 |
| Machine shop turnings | 35.00-36.00 |
| *Heavy turnings* | *49.00* |
| *Structurals & plate* | *58.00-59.00* |
| Couplers, springs, wheels | 66.00 |
| Rail crops, 2 ft & under | 69.00-71.00 |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *47.00* |
| Heavy breakable cast | 53.00 |
| *Malleable* | *62.00†* |
| Drop broken machinery | 57.00 |

†Nominal

### NEW YORK

(Brokers' buying prices)

| | |
|---|---|
| No. 2 heavy melting | 51.00-52.00 |
| No. 2 heavy melting | 41.00-42.00 |
| No. 1 bundles | 51.00-52.00 |
| *No. 2 bundles* | *39.00-40.00* |
| Machine shop turnings | 26.00-27.00 |
| Mixed borings, turning | 27.00-28.00 |
| Short shovel turnings | 29.00-30.00 |
| *Low phos. (structural & plate* | *53.00-54.00* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 46.00-47.00 |
| Unstripped motor blocks | 39.00-40.00 |
| Heavy breakable | 46.00-47.00 |

Stainless Steel

| | |
|---|---|
| *18-8 sheets, clips, solids* | *280.00-285.00* |
| *18-8 borings, turnings* | *170.00-180.00* |
| 430 sheets, clips, solids | 60.00-70.00 |
| 410 sheets, clips, solids | 50.00-55.00 |

### BOSTON

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| *No. 1 heavy melting* | *42.00-43.00* |
| No. 2 heavy melting | 35.00-36.00 |
| *No. 1 bundles* | *42.00-43.00* |
| No. 2 bundles | 33.00-34.00 |
| No. 1 busheling | 42.00-43.00 |
| Machine shop turnings | 24.00-25.00 |
| Mixed borings, turnings | 27.00-28.00 |
| Short shovel turnings | 28.00-29.00 |
| No. 1 cast | 34.00-35.00 |
| Mixed cupola cast | 33.00-34.00 |
| No. 1 machinery cast | 42.00-43.00 |

### BUFFALO

| | |
|---|---|
| No. 1 heavy melting | 46.00-47.00 |
| No. 2 heavy melting | 39.00-40.00 |
| No. 1 bundles | 46.00-47.00 |
| No. 2 bundles | 36.00-37.00 |
| No. 1 busheling | 46.00-47.00 |
| Mixed borings, turnings | 35.00-36.00 |
| *Machine shop turnings* | *31.00-32.00* |
| Short shovel turnings | 36.00-37.00 |
| Cast iron borings | 35.00-36.00 |
| Low phos. | 53.00-54.00 |

Cast Iron Grades
(F.o.b. shipping point)

| | |
|---|---|
| No. 1 cupola | 47.00-48.00 |
| No. 1 machinery | 52.00-53.00 |

Railroad Scrap

| | |
|---|---|
| Rails, random lengths | 61.00-62.00 |
| Rails, 3 ft and under | 66.00-67.00 |
| Railroad specialties | 59.00-60.00 |

### CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| *No. 1 heavy melting* | *52.00-53.00* |
| *No. 2 heavy melting* | *45.00-46.00* |
| *No. 1 bundles* | *52.00-53.00* |
| *No. 2 bundles* | *43.00-44.00* |
| *No. 1 busheling* | *52.00-53.00* |
| *Machine shop turnings* | *33.00-34.00* |
| Mixed borings, turnings | 30.00-31.00 |
| *Short shovel turnings* | *36.00-37.00* |
| Cast iron borings | 30.00-31.00 |
| *Low phos. 18 in.* | *59.00-60.00* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 45.00-46.00 |
| Heavy breakable cast | 42.00-43.00 |
| Charging box cast | 42.00-43.00 |
| Drop broken machinery | 55.00-56.00 |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *56.00-57.00* |
| *Rails, 18 in. and under* | *71.00-72.00* |
| *Rails, random lengths* | *64.00-65.00* |

### BIRMINGHAM

| | |
|---|---|
| No. 1 heavy melting | 49.00-50.00 |
| No. 2 heavy melting | 39.00-40.00 |
| No. 1 bundles | 49.00-50.00 |
| No. 2 bundles | 37.00-38.00 |
| No. 1 busheling | 49.00-50.00 |
| Cast iron borings | 28.00-29.00 |
| Short shovel turnings | 37.50-38.50 |
| Machine shop turnings | 36.50-37.50 |
| Bar crops and plates | 55.00-56.00 |
| Structurals & plate | 55.00-56.00 |
| Electric furnace bundles | 51.00-52.00 |
| Electric furnace: | |
| 3 ft and under | 49.00-50.00 |
| 2 ft and under | 48.00-49.00 |

Cast Iron Grades
(F.o.b. shipping point)

| | |
|---|---|
| *No. 1 cupola* | *54.00-55.00* |
| *Stove plate* | *54.00-55.00* |
| Unstripped motor blocks | 44.00-45.00 |
| *Charging box cast* | *37.00-38.00* |
| No. 1 wheels | 46.00-47.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 55.00-56.00 |
| *Rails, 18 in. and under* | *66.00-67.00* |
| Rails, rerolling | 75.00-76.00 |
| *Rails, random lengths* | *60.00-61.00* |
| Angles, splice bars | 60.00-61.00 |

### SEATTLE

| | |
|---|---|
| No. 1 heavy melting | 49.00 |
| No. 2 heavy melting | 44.00 |
| No. 1 bundles | 44.00 |
| No. 2 bundles | 32.00 |
| Machine shop turnings | 29.00 |
| Mixed borings, turnings | 29.00 |
| Electric furnace No. 1 | 55.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 45.00 |
| Heavy breakable cast | 37.00 |
| Unstripped motor blocks | 32.50 |
| Stove plate (f.o.b. plant) | 30.00 |

### LOS ANGELES

| | |
|---|---|
| No. 1 heavy melting | 46.00 |
| No. 2 heavy melting | 43.00 |
| No. 1 bundles | 45.00 |
| No. 2 bundles | 38.00 |
| Machine shop turnings | 32.00 |
| Shoveling turnings | 34.00 |
| Cast iron borings | 32.00 |
| Cut structural and plate, 1 ft and under | 61.00 |

Cast Iron Grades
(F.o.b. shipping point)

| | |
|---|---|
| No. 1 cupola | 53.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 46.00 |

### SAN FRANCISCO

| | |
|---|---|
| No. 1 heavy melting | 48.00 |
| No. 2 heavy melting | 46.00 |
| No. 1 bundles | 47.00 |
| No. 2 bundles | 35.00 |
| Machine shop turnings | 32.00 |
| Mixed borings, turnings | 32.00 |
| Cast iron borings | 32.00 |
| Heavy turnings | 32.00 |
| Short shovel turnings | 34.00 |
| Cut structurals, 3 ft | 56.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 53.00 |
| Charging box cast | 45.00-47.00 |
| Stove plate | 46.00 |
| Heavy breakable cast | 40.00 |
| Unstripped motor blocks | 48.00 |
| Clean auto cast | 55.00 |
| No. 1 wheels | 48.00 |
| Drop broken machinery | 53.00 |

### HAMILTON, ONT.

| | |
|---|---|
| No. 1 heavy melting | 43.00 |
| No. 2 heavy melting | 38.00 |
| No. 1 bundles | 43.00 |
| No. 2 bundles | 32.00 |
| Mixed steel scrap | 35.00 |
| Mixed borings, turnings | 19.00 |
| Busheling, new factory: | |
| Prepared | 43.00 |
| Unprepared | 37.00 |
| Short steel turnings | 30.00 |
| Rails, rerolling | 49.00 |

Cast Iron Grades†

| | |
|---|---|
| No. 1 machinery cast | 50.00 |

†F.o.b. Hamilton, Ont.

CRAWFORD H. GREENEWALT

# "$22,800,000 Invested in U.S. Savings Bonds During First Year of Thrift Plan..."

"Du Pont employees are saving about $23,000,000 each year in U.S. Savings Bonds through the Thrift Plan established by the Company in 1935. Well over 60,000 du Pont people now are purchasing U. S. Savings Bonds through payroll deduction on a regular monthly basis."

**CRAWFORD H. GREENEWALT,**
***President, E. I. du Pont de Nemours & Co., Inc.***

Here's how the du Pont thrift plan works: Employees save part of their earnings each month by payroll deductions to buy U.S. Savings Bonds, and the Company contributes one-fourth as much to buy du Pont common stock for them. The bonds are held for them by a bank and are delivered to them in annual installments, beginning four years after they join the Plan. The bank also delivers shares of stock to them when they are due.

Large or small, every company can give their employees the advantages of the Payroll Savings Plan. Installation of the Plan is simplicity itself. A Treasury representative will give you all the assistance you need to introduce the Plan or build enrollment in an existing Plan. Write: Savings Bonds Division, U. S. Treasury Department, Washington, D. C. for complete information.

*The United States Government does not pay for this advertisement. The Treasury Department thanks, for their patriotic donation, the Advertising Council and*

STEEL
The Metalworking Weekly

PUBLIC SERVICE ADVERTISING COUNCIL

# Aluminum Prices Advance

**Alcoa adds 1 cent to the price of pig, about 4 per cent to mill products. Imports still hurt zinc, with little hope for immediate congressional action. Copper dull**

Nonferrous Metal Prices, Pages 162 & 163

ALUMINUM PIG now costs 26 cents a pound.

As expected, on Aug. 1 prices on pig were advanced 1 cent a pound and about 4 per cent on alloys and mill products (see STEEL, July 29, p. 188; July 8, p. 152).

Aluminum Co. of America was the first to announce (July 29). Alcoa listed as reasons for the jump: 1. An automatic wage hike for hourly workers that went into effect on Aug. 1. 2. Increased salaries and benefits for white-collar employees. 3. Rising costs of materials, transportation and services.

Independent fabricators will probably pass the 4 per cent increase along to their customers. Reason: Most feel their own rising costs will not allow them to absorb the boost. One eastern fabricator says his company will pass on only the increased cost of aluminum—other expenses will be absorbed.

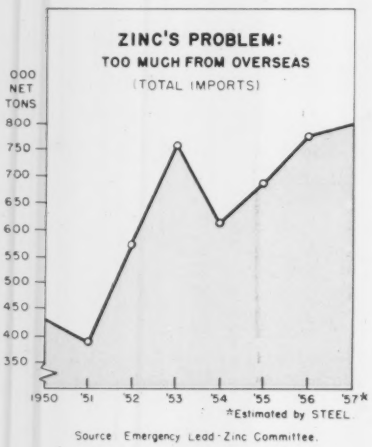
**More Aluminum**—Reynolds Metals Co. has opened a $5.5-million fabricating plant in Richmond, Va. Potential production is pegged at 2 million lb a month. Facilities include: Four, 2300-ton extrusion presses, casting equipment and a die manufacturing machine shop.

## Zinc: Little Action

Some producers report a slight pickup in new orders during the past week, but the industry's cash registers aren't too busy.

The production curtailment trend continues. New Jersey Zinc Co. announced it will stop ore production at its Sterling Hill mine, Ogdensburg, N. J., on Aug. 16. This will take an additional 1800 tons a month off the market. (Unofficial estimates peg domestic mine and smelter cutbacks since Jan. 1 at about 13,000 tons monthly.) Some observers say domestic production will have to be slashed even more before the price of 10 cents a pound is stabilized.

Producers hope the hearings being conducted by the House




Source: Emergency Lead-Zinc Committee.

Ways & Means committee will result in legislation to stop the flood of foreign imports (see chart). But most feel that even though such a bill would probably receive warm support in the Senate, it won't be proposed this session.

Office of Defense Mobilization has given the General Services Administration authority to buy lead and zinc on a month-to-month basis through June as part of the government's strategic stockpile program. But it remains to be seen whether GSA will purchase any metal.

## Copper: Sales Spotty

Currently, the copper picture is dull. Foreign sales are still good, but there's only hand-to-mouth buying on the domestic scene. By late August or early September producers hope for an order upswing from brass mills. It's still felt that the fourth quarter will bring a revival in copper sales.

The strike at Northern Rhodesian mines has ended, killing hopes that lost production might firm the red metal's price.

## Titanium Reschedules

While titanium capacity grows, orders from the metal's biggest customer, the aircraft industry, are slacking off. The Air Force is stretching out orders, forcing the industry to reschedule shipments. Probability: More production will go into missiles and civilian uses. Look for about 8500 tons of mill products this year.

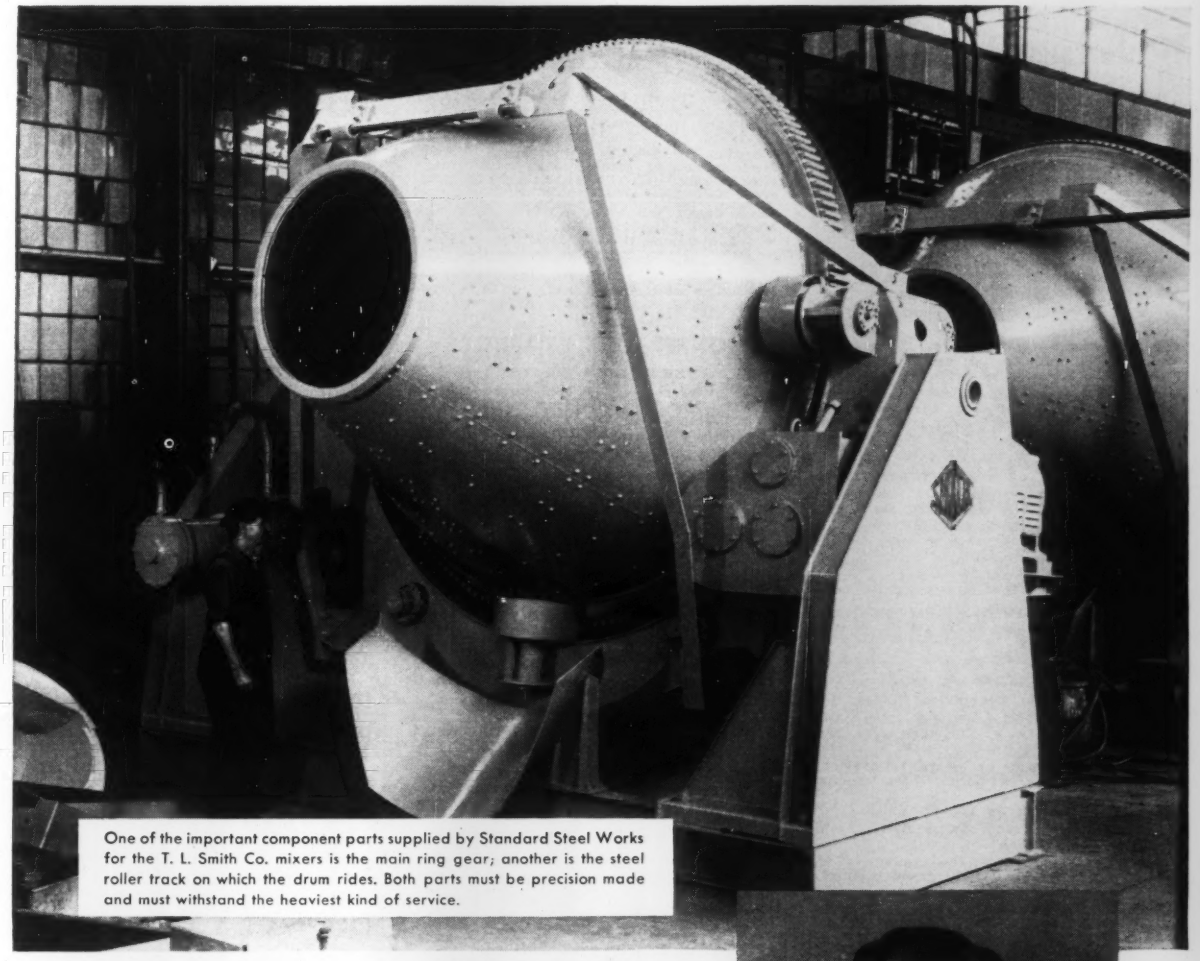
## Market Memo

• Second quarter earnings of St. Joseph Lead Co. will probably exceed the $1.01 a share reported for the March quarter. Reasons: 1. A dividend of $1,075,000 from the firm's Argentina mining subsidiary. 2. Bartering of foreign origin lead and zinc to the U.S. for surplus agricultural products.

### NONFERROUS PRICE RECORD

| | Price July 31 | Last Change | Previous Price | July Avg | June Avg | Aug., 1956 Avg |
|---|---|---|---|---|---|---|
| Aluminum | 27.10 | Aug. 10, 1956 | 25.90 | 27.100 | 27.100 | 26.700 |
| Copper | 28.25–29.25 | July 19, 1957 | 28.50–29.25 | 28.822 | 30.250 | 39.750 |
| Lead | 13.80 | June 11, 1957 | 14.80 | 13.800 | 14.120 | 15.800 |
| Magnesium | 35.25 | Aug. 13, 1956 | 33.75 | 35.250 | 35.250 | 34.694 |
| Nickel | 74.00 | Dec. 6, 1956 | 64.50 | 74.000 | 74.000 | 64.500 |
| Tin | 95.625 | July 31, 1957 | 95.875 | 96.576 | 98.080 | 99.043 |
| Zinc | 10.00 | July 1, 1957 | 10.50 | 10.000 | 10.840 | 13.500 |

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.



One of the important component parts supplied by Standard Steel Works for the T. L. Smith Co. mixers is the main ring gear; another is the steel roller track on which the drum rides. Both parts must be precision made and must withstand the heaviest kind of service.

**"The T. L. Smith Co. is constantly seeking design improvements and production economies. Standard Steel Works has proved a big help to us in both respects."**

As suppliers of component parts to the T. L. Smith Co.—world's oldest and largest manufacturer of concrete mixers—we have made it *our* business to get to know *their* business well enough to consider ourselves a part of their team.

It is our policy to work in the closest possible cooperation with all of our customers to assure maximum quality at lowest possible cost. Let us discuss your casting and forging needs with you. You'll find that service to our customers is as important as the quality of the products we make. Write Dept. 2-H.

"We are particularly impressed with Standard's methods-people and the way their engineers so effectively supplement our own in constantly suggesting design improvements and production economies," says R. R. Kupfer, purchasing agent for the T. L. Smith Co., Milwaukee, Wis.

# Standard Steel Works Division

## BALDWIN · LIMA · HAMILTON

BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

# Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

## PRIMARY METALS AND ALLOYS

**Aluminum:** 99+%, ingots, 28.10; pigs, 26.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

**Aluminum Alloy:** No. 13, 28.90; No. 43, 28.70; No. 195, 30.30; No. 241, 30.50; No. 356, 28.90, 30-lb ingots.

**Antimony:** R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

**Beryllium:** 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

**Beryllium Aluminum:** 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

**Beryllium Copper:** 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

**Bismuth:** $2.25 per lb, ton lots.

**Cadmium:** Sticks and bars, $1.70 per lb deld.

**Cobalt:** 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100-lb case; $2.07 per lb under 100 lb.

**Columbium:** Powder, $120 per lb, nom.

**Copper:** Electrolytic, 29.25 deld. Conn. valley; 29.25 deld. Midwest; custom smelters, 28.25; lake, 29.25 deld.; fire refined, 29.00 deld.

**Germanium:** First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

**Gold:** U.S. Treasury, $35 per oz.

**Indium:** 99.9%, $2.25 per troy oz.

**Iridium:** $90-110 nom. per troy oz.

**Lead:** Common, 13.80; chemical, 13.90; corroding, 13.90, St. Louis, New York basis, add 0.20.

**Lithium:** 98+%, cups or ingots, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

**Magnesium:** Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 13 in. sticks, 59.00 f.o.b. Madison, Ill.

**Magnesium Alloys:** AZ91B (die casting), 37.25 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

**Mercury:** Open market, spot, New York, $255-257 per 76-lb flask.

**Molybdenum:** Extruded ingot, $9.60 per pound, f.o.b. Detroit.

**Nickel:** Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

**Osmium:** $80-100 per troy oz, nom.

**Palladium:** $21-21.50 per troy oz.

**Platinum:** $84-87 per troy oz from refineries.

**Radium:** $16-21.50 per mg radium content, depending on quantity.

**Rhodium:** $120-125 per troy oz.

**Ruthenium:** $50-55 per troy oz.

**Selenium:** $10.50 per lb, commercial grade.

**Silver:** Open market, 90.25 per troy oz.

**Sodium:** 16.50, c.l.; 17.00 l.c.l.

**Tantalum:** Rod, $60 per lb; sheet, $55. per lb.

**Tellurium:** $1.65-1.85 per lb.

**Thallium:** $12.50 per lb.

**Tin:** Straits, N.Y., spot, 95.625; prompt, 95.625.

**Titanium:** Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.25; grade A-2 (0.5% Fe max.), $2.00 per lb.

**Tungsten:** Powder, 98.8%, carbon reduced, 1000-lb lots, $3.75 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $4.50.

**Zinc:** Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

**Zirconium:** Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

## SECONDARY METALS AND ALLOYS

**Aluminum Ingot:** Piston alloys, 24.25-29.50; No. 12 foundry alloy (No. 2 grade), 22.75-24.25; 5% silicon alloy, 0.60 Cu max., 26.00-26.50; 13 alloy, 0.60 Cu max., 26.00-26.50; 195 alloy, 25.75-27.25; 108 alloy, 23.25-24.25. Steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 24.50; grade 2, 22.75; grade 3, 21.75; grade 4, 20.75.

**Brass Ingot:** Red brass, No. 115, 29.50; tin bronze, No. 225, 39.00; No. 245, 33.50; high-leaded tin bronze, No. 305, 33.50; No. 1 yellow, No. 405, 24.00; manganese bronze, No. 421, 27.00.

**Magnesium Alloy Ingot:** AZ63A, 37.50; AZ91B, 37.50; AZ91C, 37.50; AZ92A, 37.50.

## NONFERROUS PRODUCTS

### BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.77, f.o.b. Temple, Pa.

### COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 34.605; l.c.l., 35.23. Weatherproof, 30,000-lb lots, 35.72; l.c.l., 36.47. Magnet wire deld., 15,000 lb or more, 41.93; l.c.l., 42.68.

### LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $19.50 per cwt; pipe, full coils, $19.50 per cwt; traps and bends, list prices plus 30%.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $9.50-15.95; sheared mill plate, $8.00-11.50; wire, $7.50-11.50; forging billets, $6.00-7.60; hot-rolled and forged bars, $6.15-7.90.

### ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

### ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.00-31.25; forged or H.R. bars, $11.00-17.40.

### NICKEL, MONEL, INCONEL

| | "A" Nickel | Monel | Inconel |
|---|---|---|---|
| Sheets, C.R. | 126 | 106 | 128 |
| Strip, C.R. | 124 | 108 | 138 |
| Plate, H.R. | 120 | 105 | 121 |
| Rod, Shapes, H.R. | 107 | 89 | 109 |
| Seamless Tubes | 157 | 129 | 200 |

### ALUMINUM

**Sheets and Circles:** 1100 and 3003 mill finish (30,000 lb base; freight allowed).

| Thickness Range Inches | Flat Sheet | Coiled Sheet |
|---|---|---|
| 0.249-0.138 | 40.90-45.40 | ... |
| 0.135-0.096 | 41.40-46.50 | 37.70-39.60 |
| 0.095-0.077 | 42.10-48.30 | 37.80-39.80 |
| 0.076-0.061 | 42.70-50.60 | 38.20-40.50 |
| 0.060-0.048 | 43.40-52.90 | 38.80-41.50 |
| 0.047-0.038 | 43.90-55.60 | 38.60-42.90 |
| 0.037-0.030 | 44.30-50.00 | 40.40-44.70 |
| 0.029-0.024 | 44.90-52.40 | 41.00 |
| 0.023-0.019 | 45.80-52.20 | 42.00 |
| 0.018-0.017 | 46.50-53.30 | 42.60 |
| 0.016-0.015 | 47.50-53.90 | 43.40 |
| 0.014 | 48.50-50.90 | 44.40 |
| 0.013-0.012 | 49.70-52.10 | 45.10 |
| 0.011 | 50.70-53.70 | 46.30 |
| 0.010-0.0095 | 52.10-54.40 | 47.60 |
| 0.009-0.0085 | 53.40 | 49.10 |
| 0.008-0.0075 | 55.00 | 50.30 |
| 0.007 | 56.50 | 51.80 |
| 0.006 | 58.10 | 53.20 |

### ALUMINUM (continued)

**Plates and Circles:** Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

| Alloy | Plate Base | Circle Base |
|---|---|---|
| 1100-F, 3003-F | 42.70 | 40.75 |
| 5050-F | 43.80 | 48.60 |
| 3004-F | 44.80 | 50.50 |
| 5052-F | 45.40 | 51.20 |
| 6061-T6 | 46.40 | 53.00 |
| 2024-T4* | 50.60 | 57.40 |
| 7075-T6* | 58.40 | 66.00 |

*24-48 in. width or diam., 72-180 lengths.

**Screw Machine Stock:** 30,000 lb base.

| Diam.(in.)or across flats | ——Round—— 2011-T3 | 2017-T4 | —Hexagonal— 2011-T3 | 2017-T4 |
|---|---|---|---|---|
| **Drawn** | | | | |
| 0.125 | 78.20 | 75.20 | .... | .... |
| 0.156-0.172 | 66.20 | 63.40 | .... | .... |
| 0.188 | 66.20 | 63.40 | .... | 81.60 |
| 0.219-0.234 | 63.00 | 61.50 | .... | .... |
| 0.250-0.281 | 63.00 | 61.50 | .... | 77.90 |
| 0.313 | 63.00 | 61.50 | .... | 74.20 |
| 0.344 | 81.60 | .... | .... | .... |
| **Cold-Finished** | | | | |
| 0.375-0.547 | 62.50 | 61.30 | 74.80 | 69.80 |
| 0.563-0.688 | 62.50 | 61.30 | 71.11 | 65.50 |
| 0.750-1.000 | 61.00 | 59.70 | 64.90 | 61.70 |
| 1.063 | 61.00 | 59.70 | .... | 59.60 |
| **Rolled** | | | | |
| 1.125-1.500 | 58.60 | 57.40 | 62.80 | 59.60 |
| 1.563 | 57.00 | 55.70 | .... | .... |
| 1.625-2.000 | 56.30 | 54.90 | .... | .... |
| 2.125-2.500 | 54.80 | 53.40 | .... | .... |
| 2.563-3.375 | 53.20 | 51.70 | .... | .... |

**Forging Stock:** Round, Class 1, 43.30-55.90 in specific lengths, 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 48.10-63.20 in random lengths, 0.375-4 in. thick, width 0.0750-10 in.

**Pipe:** ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

| Nom. Pipe Size (in.) | | Nom. Pipe Size (in.) | |
|---|---|---|---|
| ¾ | $18.75 | 2 | $ 57.00 |
| 1 | 29.00 | 4 | 157.20 |
| 1¼ | 39.25 | 6 | 281.65 |
| 1½ | 46.95 | 8 | 423.80 |

**Extruded Solid Shapes:**

| Factor | Alloy 6063-T5 | Alloy 6062-T6 |
|---|---|---|
| 9-11 | 43.10-44.60 | 57.80-61.80 |
| 12-14 | 43.40-44.80 | 58.40-62.70 |
| 15-17 | 43.60-45.40 | 59.60-64.30 |
| 18-20 | 44.10-45.80 | 61.50-66.80 |

### MAGNESIUM

**Sheet and Plate:** AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Thread plate, .188 in., 71.70; .250-2.00 in., 70.60. Tooling plates, .250-3.0 in., 73.00.

**Extruded Solid Shapes:**

| Factor | Com. Grade (AZ31C) | Spec. Grade (AZ31B) |
|---|---|---|
| 6-8 | 69.60-72.40 | 84.60-87.40 |
| 12-14 | 70.70-73.00 | 85.70-88.00 |
| 24-26 | 75.60-76.30 | 90.60-91.30 |
| 36-38 | 89.20-90.30 | 104.20-105.30 |

## NONFERROUS SCRAP

### DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

**Aluminum:** 1100 clippings, 13.00-13.50; old sheets, 10.00-10.50; borings and turnings, 6.50-

## BRASS MILL PRICES

| | MILL PRODUCTS a | | | | SCRAP ALLOWANCES f | | |
|---|---|---|---|---|---|---|---|
| | Sheet, Strip, Plate | Rod | Wire | Seamless Tubes | Clean Heavy | Rod Ends | Clean Turnings |
| Copper | 51.38b | 48.61c | .... | 51.57 | 25.250 | 25.250 | 24.500 |
| Yellow Brass | 44.69 | 32.87d | 45.23 | 47.60 | 19.125 | 18.875 | 17.375 |
| Low Brass, 80% | 47.40 | 47.34 | 47.94 | 50.21 | 21.375 | 21.125 | 20.625 |
| Red Brass, 85% | 48.36 | 48.30 | 48.90 | 51.17 | 22.250 | 22.000 | 21.500 |
| Com. Bronze, 90% | 49.86 | 49.80 | 50.40 | 52.42 | 23.125 | 22.875 | 22.375 |
| Manganese Bronze | 52.52 | 46.69 | 57.19 | .... | 17.625 | 17.375 | 16.875 |
| Muntz Metal | 46.94 | 42.75 | .... | .... | 17.875 | 17.625 | 17.125 |
| Naval Brass | 48.85 | 43.16 | 55.91 | 52.26 | 17.625 | 17.375 | 16.875 |
| Silicon Bronze | 55.96 | 55.15 | 56.00 | 57.97e | 24.750 | 24.500 | 24.750 |
| Nickel Silver, 10% | 61.52 | 63.85g | 63.85 | .... | 25.750 | 25.000 | 12.875 |
| Phos. Bronze, A-5% | 70.47 | 70.97 | 70.97 | 72.15 | 26.250 | 26.000 | 25.000 |

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded

7.00; crankcases, 10.00-10.50; industrial castings, 10.00-10.50.

**Copper and Brass:** No. 1 heavy copper and wire, 21.00-21.50; No. 2 heavy copper and wire, 19.50-20.00; light copper, 17.00-17.50; No. 1 composition red brass, 18.50-19.00; No. 1 composition turnings, 18.00-18.50; yellow brass turnings, 10.75-11.25; new brass clippings, 17.00-17.50; light brass, 10.50-11.00; heavy yellow brass, 12.50-13.00; new brass rod ends, 14.50-15.00; auto radiators, unsweated, 13.50-14.00; cocks and faucets, 14.50-15.00; brass pipe, 15.50-16.00.

**Lead:** Heavy 9.50-10.00; battery plates, 4.25-4.50; linotype and stereotype, 11.50-12.00; electrotype, 10.00-10.50; mixed babbitt, 11.00-11.50.

**Monel:** Clippings, 45.00-53.00; old sheets, 44.00-53.00; turnings, 35.00-43.00; rods, 45.00-53.00.

**Nickel:** Sheets and clips, 85.00-90.00; rolled anodes, 85.00-90.00; turnings, 70.00-75.00; rod ends, 85.00-90.00.

**Zinc:** Old Zinc, 1.75-2.25; new die-cast scrap, 2.50-3.50; old die-cast scrap, 1.75-2.25.

### REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

**Aluminum:** 1100 clippings, 17.75-18.75; 3003 clippings, 17.75-18.75; 6151 clippings, 17.50-18.75; 5052 clippings, 17.50-18.25; 2014 clippings, 17.00-18.25; 2017 clippings, 17.00-18.25; 2024 clippings, 17.00-18.25; mixed clippings, 16.25-17.25; old sheets, 14.25-15.25; old cast, 14.25-15.25; clean old cable (free of steel), 17.50-18.75; borings and turnings, 15.00-16.75.

**Beryllium Copper:** Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

**Copper and Brass:** No. 1 heavy copper and wire 24.75; No. 2 heavy copper and wire, 22.50; light copper, 20.25; refinery brass (60% copper) per dry copper content, 22.125.

### INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

**Copper and Brass:** No. 1 heavy copper and wire, 24.75; No. 2 heavy copper and wire, 22.50; light copper, 20.25; No. 1 composition borings, 21.00; No. 1 composition solids, 21.50; heavy yellow brass solids, 15.50; yellow brass turnings, 14.50; radiators, 17.00.

## PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

### ANODES

**Cadmium:** Special or patented shapes, $1.70 per lb.

**Copper:** Flat-rolled, 47.54; oval, 45.75, 5000-10,000 lb; electrodeposited, 39.50, 2000-5000 lb lots; cast, 41.00, 5000-10,000 quantities.

**Nickel:** Depolarized, less than 100 lb, 101.50; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb.

**Tin:** Bar or slab; less than 200 lb, 114.50; 200-499 lb, 113.00; 500-999 lb, 112.50; 1000 lb or more, 112.00.

**Zinc:** Balls, 17.50; flat tops, 17.50; flats, 19.25; ovals, 18.50, ton lots.

### CHEMICALS

**Cadmium Oxide:** $1.70 per lb in 100-lb drums.

**Chromic Acid:** 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30, f.o.b. Detroit.

**Copper Cyanide:** 100-200 lb, 74.80; 300-900 lb, 72.80.

**Copper Sulphate:** 100-1900 lb, 15.20; 2000-5900 lb, 13.20; 6000-11,900 lb, 12.95; 12,000-22,900 lb, 12.70; 23,000 lb or more, 12.20.

**Nickel Chloride:** 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400 lb, 43.50; 5000 lb, 41.50; 10,000 lb, 40.50.

**Nickel Sulphate:** 100 lb, 40.50; 200 lb, 38.50; 300 lb, 37.50; 400-4900 lb, 35.50; 5000-29,900 lb, 33.50; 30,000 lb or more, 32.50.

**Sodium Cyanide:** 100 lb, 27.50; 200 lb, 25.80; 400 lb, 22.80; 1000 lb, 21.80; f.o.b. Detroit.

**Sodium Stannate:** Less than 100 lb, 76.30; 100-600 lb, 67.20; 700-1900 lb, 64.50; 2000-9900 lb, 62.60; 10,000 lb or more, 61.30.

**Stannous Chloride (anhydrous):** Less than 25 lb, 165.90; 25 lb 130.90; 100 lb, 115.90; 400 lb, 113.50; 5200-19,600 lb, 101.30; 20,000 lb or more, 89.10.

**Stannous Sulphate:** Less than 50 lb, 128.70; 50 lb, 98.70; 100-1900 lb, 96.70; 2000 lb or more, 94.70.

**Zinc Cyanide:** 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from page* 157)

short supply. Rail offerings have been running light. Heavy breakable cast and unstripped motor blocks are up $2 because of unusual demand from outside districts. Melting steel grades are unchanged, except for minor equalizations with other areas. The market undertone continues strong, but mill bookings are small and selective.

**Birmingham** — Although scrap consumers have limited their buying for several weeks in an effort to discourage a further price rise, their action has had little effect on the market. One large cast buyer last week bought No. 1 cupola and stove plate at advances of $1 a ton.

The largest open-hearth steel buyer in the district continues out of the market. Electric furnace material prices are steady. Exporters now are quoting prices to draw scrap from nearby points, but they are not pushing inland.

**San Francisco** — There is little movement currently in the local


**UNLIMITED OPPORTUNITY AVAILABLE**

as representative of nationally advertised industrial marking Paintstiks. Sold to Industrial Distributors exclusively. Extensive national advertising campaign constantly furnishes sales leads to be contacted. In reply, please describe your territory and names of other manufacturers represented.

**Write Box 570 STEEL**
**Penton Bldg., Cleveland 13, Ohio**


## CLASSIFIED

**DISTRIBUTORSHIPS WANTED**

Connecticut concern established 53 years seeking new lines for direct selling to all industrial plants, heating and electrical contractors. Engineering department available if necessary for the sale of product. State if item ever sold in Connecticut and send catalogs, prices, discounts and any other pertinent information to BOX 571, STEEL, Penton Bldg., Cleveland 13, Ohio.

### Help Wanted

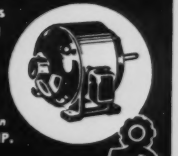
WANTED ENGINEERS, DRAFTSMEN, AND layouts. One of the leading structural steel and plate fabricating companies in Florida (located in Central Florida). Ideal working conditions; air conditioned office, co-benefits, insurance, hospitalization, vacation, and holidays. Write Box 574, STEEL, Penton Bldg., Cleveland 13, Ohio.

### Positions Wanted

FABRICATOR STRUCTURAL STEEL, BRIDGES, plate work heavy construction equipment, and miscellaneous steel work, in all phases of steel fabrication, welded or riveted construction. Married, best reference. Available at once. Write Box 578, STEEL, Penton Bldg., Cleveland 13, Ohio.


**GET CASH NOW**

for your new surplus motors, controls and transformers!



**NEW MOTORS AVAILABLE:**

Over 5,000 new motors, in stock, from ¼HP to 200 HP.
Special low prices.

*Write, wire or phone collect!*

**AJAX ELECTRIC MOTOR CORP.**
P.O. Box 262, Rochester, N.Y.
Long Distance Phone LD. 132

**FORGING PRESS**

**1200 Ton UNITED Steam hydraulic—**
**Very good condition**

48" stroke—6' R to L. Complete with intensifier and valve gear. Available immediately.

**Address Box 577, care STEEL, Penton Bldg., Cleveland 13, O.**

**WANTED**

**GENERAL SUPERINTENDENT**

for Seawater Magnesia and Basic Brick plant operation. Location—Gulf Coast.

Applicant should be 35 to 45 years old and should have technical education with extensive operational experience in Refractories industry. Experience in manufacturing of basic refractories desirable but not essential. Applicant should have knowledge through education or previous experience of inorganic chemical process technology.

Please submit replies to Box No. 575, STEEL, Penton Bldg., Cleveland 13, Ohio, stating educational background, previous experience, and salary desired.

**CHEMICAL ENGINEER**

**COKE PLANT**

We have an opening in our organization for an Assistant Superintendent, between 34 and 45 years of age, with 10 to 15 years practical experience in operations, including at least 5 years in supervision. Minimum educational background graduate Chemical Engineer, or equivalent. Must have a thorough knowledge of all phases of coke plant production and know how to handle men effectively. Salary open. Attractive retirement plan; midwest location, desirable for family living. Give full details in first reply.

**Write Box 573, STEEL**

Penton Bldg. Cleveland 13, Ohio

THOMAS JAK TUNG SYSTEM

"JOB-SUITED" to TRUCK, STORE and SPOT your loads WITHOUT REHANDLING

WRITE FOR CATALOG NO. JT-53

THOMAS TRUCK & CASTER CO.
752 Mississippi River • Keokuk, Iowa

THOMAS MAKES ALL KINDS OF TRUCKS, SKIDS, CASTERS AND WHEELS

MOTORIZED
COIL LIFTER
SAVES
STORAGE SPACE...
HANDLES COILS FASTER ... SAFER

*1 Lifter Handles Both Wide and Narrow Coils With Same Speed and Economy*

This C-F Coil Lifter, under control of the Crane operator handles hundreds of coils a day in a large mill ... wide, narrow, and of varying tonnage. Fast, infinite adjustments of the motorized legs permit quick pick-up and set-down. Legs can be opened to any width and held ... no need to open to maximum width to handle narrow coil. Maximum of 12" required between coils of any width—saves storage room.

Positive tong grip on coil tightens as lift is made ... insures safe handling. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for Bulletin and complete information.

CULLEN-FRIESTEDT CO.
1308 South Kilbourn Avenue • Chicago 23, Illinois

steel scrap market. The mills hold substantial inventories.

Los Angeles—Scrap prices are unchanged in this market. Some dealers say mills' offering quotations are $1 to $2 under what tonnage will bring in actual sales.

## Pig Iron . . .

Pig Iron Prices, Page 152

Merchant pig iron buying is taking a more decided turn upward. Adverse seasonal influences will continue throughout this month, but most foundry suspensions for mass vacations are over, and the improvement in operations will shortly give rise to a demand for iron.

The smaller of the Alan Wood Steel Co.'s blast furnaces at Swedeland, Pa., which has been down several weeks for repairs and enlargement, has been relighted.

## Iron Ore . . .

Iron Ore Prices, Page 153

Stocks of iron ore and ore agglomerates on hand on the last day of June totaled 41,201,237 gross tons, reports the American Iron Ore Association.

Breakdown: U.S. Lake Superior ores, 28,409,328 tons, against 29,965,742 a year ago; other U.S. ores, 3,317,500, against 2,620,610; Canadian Lake Superior ores, 1,160,454, against 869,281; other Canadian ores, 3,184,939, against 2,320,856; foreign ores (except Canada) 5,129,016, against 3,708,163.

Consumption during June amounted to 10,973,013 tons, against 10,575,249 in the like month of 1956. Breakdown: U.S. Lake Superior ores, 6,611,090 tons, against 6,911,684 a year ago; other U.S. ores, 1,708,945, against 1,419,974; Canadian Lake Superior ores, 320,146, against 282,554; other Canadian ores, 843,697, against 723,127; foreign ores (other than Canadian), 1,489,135, against 1,237,910 tons.

Shipments of Lake Superior iron ore in the seven-day period ended July 29 totaled 3,164,408 gross tons.

Cumulative movement of ore in the 1957 shipping season to July 29 was reported at 43,265,048 tons, up 9,527,673 tons from the 33,737,375 shipped in the 1956 period.

# Advertising Index


Acme Chain Corporation ..... 74
Aetna Life Insurance Co. ..... 41
Ajax Electric Motor Corporation ..... 163
Allegheny Ludlum Steel Corporation ..... 38
Allied Research Products, Inc. ..... 116
Allis-Chalmers ..... 20, 21
Anaconda Wire & Cable Co. ..... 42, 43
Armco Steel Corporation ..... 52

Baldwin-Lima-Hamilton Corporation, Standard Steel Works Division ..... 161
Basic, Inc. ..... 51
Bethlehem Steel Co. ..... 1, 166
Bliss, E. W., Co. ..... 13
Bliss, E. W., Co., Rolling Mill Division ..... 37
Browning, Victor R., & Co., Inc. ..... 156
Bullard Co., The ..... 68
Bunting Brass & Bronze Co., The ..... 122

Cambridge Wire Cloth Co., The ..... 140
Carlson, G. O., Inc. ..... 119
Cattie, Joseph P., & Brothers, Inc. ..... 156
Chambersburg Engineering Co. ..... 156
Cleveland Cap Screw Co., The ..... 9
Cleveland Hotel ..... 16
Cleveland Worm & Gear Co., The ..... Inside Back Cover
Colorado Fuel & Iron Corporation, The ..... 29, 45
Columbia-Southern Chemical Corporation ..... 18, 19
Continental Steel Corporation ..... 126
Continental Tool Works Division of Ex-Cell-O Corporation ..... 6
Cone Automatic Machine Co., Inc. ..... 79
Copper & Brass Research Association ..... 46
Copperweld Steel Co., Ohio Seamless Tube Division ..... 121
Copperweld Steel Co., Steel Division ..... 71
Corhart Refractories Co., Inc. ..... 134
Crucible Steel Company of America ..... 142
Cullen-Friestedt Co. ..... 164
Cutler-Hammer, Inc. ..... Back Cover

Despatch Oven Co. ..... 85
Diamond Manufacturing Co. ..... 75
Duraloy Co., The ..... 10

Eastman Kodak Co., X-ray Division ..... 127
Electric Controller & Mfg. Co., The, A Division of The Square D Co. Inside Front Cover
Electro Metallurgical Co., Division of Union Carbide Corporation ..... 8
Erie Forge & Steel Corporation ..... 82
Erie Strayer Co. ..... 156
Ex-Cell-O Corporation ..... 7
Ex-Cell-O Corporation, Continental Tool Works Division ..... 6

Fairfield Manufacturing Co. ..... 143
Federal Machine & Welder Co., The ..... 47
Fielden Instrument Division, Robertshaw-Fulton Controls Co. ..... 114
Frasse, Peter A., & Co., Inc. ..... 3

Globe Steel Abrasive Co., The ..... 23
Goodyear Tire & Rubber Co., Inc., The, Industrial Products Division ..... 4
Greenlee Bros. & Co. ..... 115
Gulf Oil Corporation ..... 113

Hansen Manufacturing Co., The ..... 124
Haynes Stellite Co., Division of Union Carbide Corporation ..... 14, 15
Hevi-Duty Electric Co. ..... 129
Hyde Park Foundry & Machine Co. ..... 165

Illinois Gear & Machine Co. ..... 131
Industrial Brownhoist Corporation ..... 103
Inland Steel Co. ..... 32

Jessop Steel Co. ..... 133
Jones & Laughlin Steel Corporation ..... 101

Kardong Brothers, Inc. ..... 156
Kendall Co., The, Polyken Sales Division ..... 105

Lynchburg Foundry Co. ..... 24

McKay Machine Co. ..... 63

Malleable Founders' Society ..... 12
Manning, Maxwell & Moore, Inc., Shaw-Box Crane & Hoist Division ..... 98
Mathews Conveyor Co. ..... 120
May-Fran Engineering, Inc. ..... 138, 139
Metal Processing Machine Co., The ..... 63

National Acme Co., The ..... 11
National Automatic Tool Co., Inc. ..... 108, 109
National Steel Corporation ..... 40
Norton Co. ..... 34, 35

Ohio Seamless Tube Division of Copperweld Steel Co. ..... 121
Orban, Kurt, Co., Inc. ..... 144

Pickands Mather & Co. ..... 106
Pittsburgh Engineering & Machine Co., Division of Pittsburgh Steel Foundry Corporation ..... 97
Polyken Sales Division, The Kendall Co. ..... 105

Reliance Electric & Engineering Co. ..... 64
Republic Steel Corporation ..... 30, 31
Robertshaw-Fulton Controls Co., Fielden Instrument Division ..... 114
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation ..... 29, 45
Ruemelin Mfg. Co. ..... 123
Ryerson, Joseph T., & Son, Inc. ..... 54

Sealmaster Bearings, A Division of Stephens-Adamson Mfg. Co. ..... 33
Sharon Steel Corporation ..... 81
Shaw-Box Crane & Hoist Division, Manning, Maxwell & Moore, Inc. ..... 98
Shenango Furnace Co., The, Centrifugally Cast Products Division ..... 141
Silent Hoist & Crane Co. ..... 123
SKF Industries, Inc. ..... 2
Square D Co., The, The Electric Controller & Mfg. Co. Division ..... Inside Front Cover
Standard Pressed Steel Co., Hallowell Shop Equipment Division ..... 44
Standard Steel Works Division, Baldwin-Lima-Hamilton Corporation ..... 161
Standard Tube Co., The ..... 155
Stephens-Adamson Mfg. Co., Sealmaster Bearings Division ..... 33
Sterling Bolt Co. ..... 102

Texas Co., The ..... 48
Thomas Flexible Coupling Co. ..... 130
Thomas Truck & Caster Co. ..... 164
Thompson Products, Inc., Valve Division ..... 136
Timken Roller Bearing Co., The, Steel & Tube Division ..... 72
Tinnerman Products, Inc. ..... 76
Torrington Co., The, Swager Department ..... 86
Tubular Rivet & Stud Co. ..... 128

Union Carbide Corporation, Electro Metallurgical Division ..... 8
Union Carbide Corporation, Haynes Stellite Division ..... 14, 15
United States Rubber Co., Mechanical Goods Division ..... 95

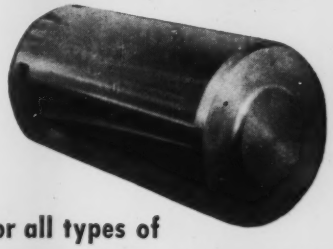
Valve Division, Thompson Products, Inc. ..... 136

Wagner Brothers, Inc. ..... 125
Wales-Strippit Co. ..... 39
Weirton Steel Co. ..... 40
Westinghouse Electric Corporation ..... 25, 26, 27, 28
Wheland Co., The ..... 36

Youngstown Foundry & Machine Co., The ..... 17
Youngstown Sheet & Tube Co., The ..... 22



Table of Contents, Page 5
Classified Advertising, Page 163



for all types of
**HYDRAULIC EQUIPMENT**

Hyde Park Rams are available in Chilled or Alloy Iron.

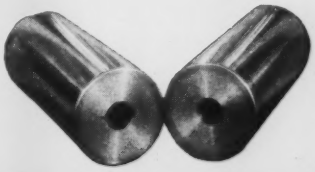
Furnished in hardness range to meet your specification... ground to your required size.

On your next replacement of Rams — or for new equipment—consult us. Our engineers will be glad to assist you.

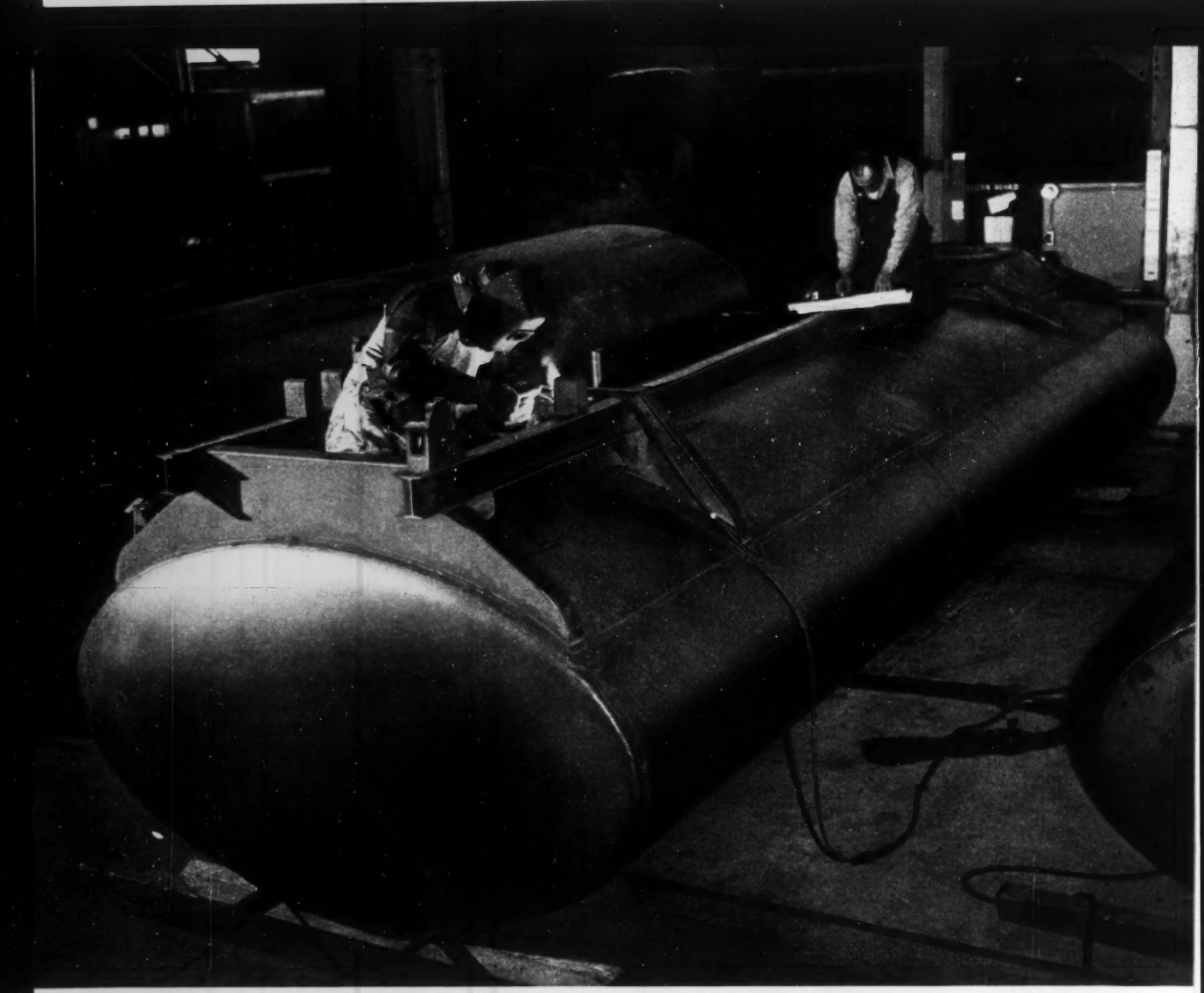
**Red Circle Rolls for every Purpose**

**Rolling Mill Equipment**

**Gray Iron Castings up to 80,000 lb.**



**Hyde Park**
**FOUNDRY & MACHINE CO.**
Hyde Park, Westmoreland Co., Pa.
ROLLS
ROLLING MILL MACHINERY
GREY IRON CASTINGS



Putting the finishing touches on a 4600-gal tank trailer in the shops of Industrial Steel Tank and Body Works Berkeley, California. Tank was welded from 12-ga Mayari R sheets.

# They use 12-ga Mayari R sheets in place of 10-ga carbon steel

This tank trailer, being assembled in the shops of Industrial Steel Tank and Body Works, Berkeley, California, is a hot-oil carrier to be used in road construction jobs. Formerly made of 10-ga carbon steel sheets, the tanks are now welded from 12-ga Mayari R high-strength, low-alloy steel sheets with substantial savings in deadweight.

"We have wide acceptance of our hot oil tanks made of 12-ga Mayari R," say the Industrial Tank people, adding: "In working with Mayari R there are no welding problems. It is easy to work with and it is a good, tough piece of material for the job, with terrific savings because of the lighter-weight sheet we can use."

More and more manufacturers of tankers like this, as well as buses, walk-in panels, dump trucks and flat-beds are turning to Mayari R. Shop men find they can weld, work and form Mayari R without special equipment or techniques. Owners like the fact that Mayari R holds paint much longer than carbon steel, and resists atmospheric corrosion 5 to 6 times better.

If your product is one which might benefit from the superior properties of Mayari R sheets, a Bethlehem representative will be glad to discuss it with you. You can reach him through the nearest Bethlehem district sales office.

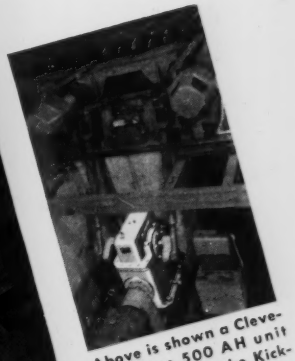
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

*Export Distributor:* Bethlehem Steel Export Corporation

**Mayari R**...High-Strength, Corrosion-Resisting Steel

BETHLEHEM STEEL



Above is shown a Cleveland size 500 AH unit which operates the Kick-Off Drive for the cooling bed of a Birdsboro Merchant Mill at Phoenix Manufacturing Company—Steel Mill Division, Joliet, Ill.

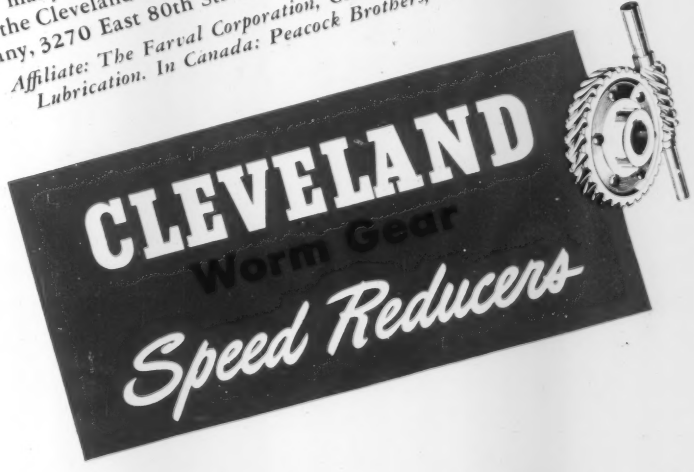
# CLEVELANDS drive these merchant mill cooling beds

FROM the merchant mills, white hot bar and rod stock shoots out on these cooling beds: And transmitting power smoothly and uniformly, to keep the beds rolling at mill speeds are the Cleveland Worm Gear Drives shown here.

Wherever motor power must be transmitted through a right-angle drive, efficiently, uninterruptedly, regardless of load or shock, you can depend on a Cleveland. Hundreds of thousands of Cleveland drives are in continuous, heavy-duty service, many on the job for twenty, thirty, forty years and more.

There are Cleveland models to meet every requirement. Write for Bulletin 145, which illustrates and describes the many types and sizes of worm gear speed reducers in the Cleveland line. The Cleveland Worm & Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

*Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.*



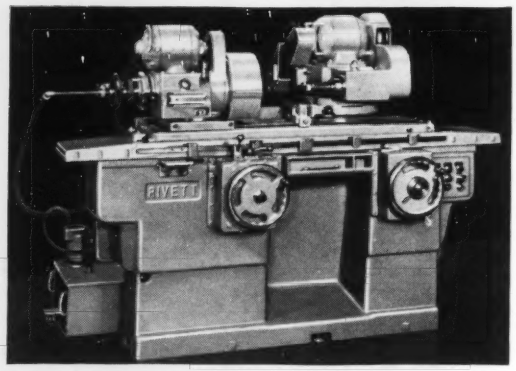
CUTLER-HAMMER

MOTOR CONTROL

C-H

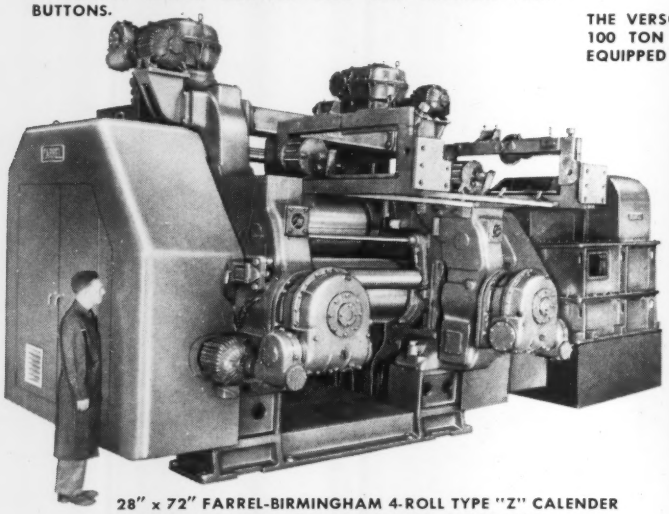
CHOICE OF THE LEADERS

THE MARK OF BETTER MACHINES

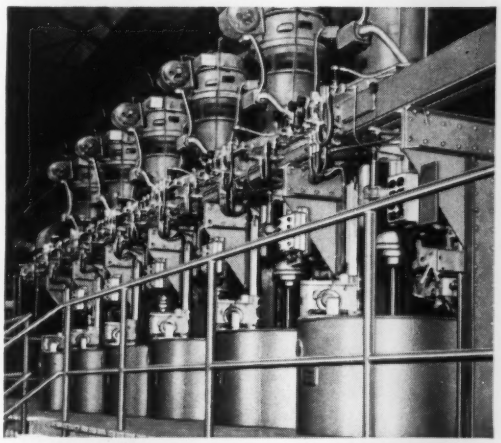



THE RIVETT 1024 INTERNAL AND UNIVERSAL GRINDER MADE BY RIVETT LATHE AND GRINDER INC., INCLUDES CUTLER-HAMMER THREE-STAR MOTOR CONTROL AND NEW OIL-TIGHT PUSH-BUTTONS.

THE VERSON ALLSTEEL PRESS COMPANY'S 100 TON GANG PUNCHING MACHINE IS EQUIPPED WITH CUTLER-HAMMER CONTROL.



28" x 72" FARREL-BIRMINGHAM 4-ROLL TYPE "Z" CALENDER IS EQUIPPED WITH CUTLER-HAMMER THREE-STAR MOTOR CONTROL AND HEAVY DUTY OIL-TIGHT PUSHBUTTONS.



THE WESTERN STATES MACHINE COMPANY INSTALLS CUTLER-HAMMER THREE-STAR MOTOR CONTROL ON THEIR ELECTRICALLY DRIVEN CENTRIFUGALS.

## *Stars that have no Equal*

There is no such thing as the manufacturer of a bad product in American industry; competition is too keen for such a company to live. But there are degrees of merit. Among machinery builders, there are those whose products are accepted as being better than others, and a few whose machines are widely recognized as the best. These machinery builders are the acknowledged leaders in their field . . . *they have no equal*. This position of leadership was not easily won nor is it held without constant attention to every detail which influences the product's performance. It is most significant that so many of these leaders standardize on Cutler-Hammer Three-Star Motor Control as original equipment for their machines . . . *the stars have no equal*. Machinery buyers find Cutler-Hammer Motor Control a reliable guide to greater value and satisfaction. CUTLER-HAMMER, Inc., 1211 St. Paul Ave., Milwaukee 1, Wis. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.